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THE FOSSA OF ROSENMUELLER FROM THE RHINOLOGICAL STANDPOINT.*

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The fossa of Rosenmüller, the triangular corner of the nasopharynx situated behind the Eustachian eminence, is a region of the body with which we are all familiar. Yet I believe that I am correct in stating, that in the minds of most of us, pathological conditions in this region have always been associated with symptoms referable to the ear, with tinnitus, Eustachian catarrh, etc. Nowhere in the recent literature on the subject, have I been able to find any reference to symptoms usually associated with the diseases of the nose. A study of the anatomy and physiology of this region, however, will make it clear that the ear symptoms are very often secondary to disturbances of the functions of the nose, occasioned by pathological changes in this region.

The Eustachian eminence consists mainly of a plate of cartilage, bent like the inverted letter *U*, which projects downward and forward into the naso-pharynx, for a distance of nearly one inch. The mucous membrane which covers the posterior and superior aspects of the cartilage, extends outward nearly its entire length and, at its outermost extremity, becomes attached to the base of the skull. The fossa is, therefore, nearly one inch in depth. The

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tip of the Eustachian eminence is free in the naso-pharynx and is situated at a distance of 1.8 cm., nearly three-quarters of an inch, from the posterior wall and an equal distance from the vault of the naso-pharynx. The distance between the tips of the two eminences is about 2.5 cm.

The main respiratory air-channel in the nose lies in the middle meatus, which is on a level with the tip of the Eustachian eminence. When, therefore, the main respiratory air-current reaches the naso-pharynx, it is divided. Part of it passes above the eminence, through the fossa of Rosenmüller and down into the pharynx; part of it passes in front of the eminence, over the soft palate; and the remainder passes into the space between the two eminences. The air-current also changes its direction when it reaches the naso-pharynx, from horizontal, to a downward direction. It is evident, therefore, that any obstruction in the fossa of Rosenmüller, or in the space between them, will interfere seriously with the smooth passage of air from the nose into the throat.

I need only refer to the respiratory obstruction caused by the presence of adenoid masses in the naso-pharynx. The lateral comb of the hypertrophied adenoid mass comes into contact with the tip of the Eustachian eminence and with the edge of the posterior lip. When the adenoid becomes inflamed, the edge of the lateral comb becomes adherent to the eminence. When the lymphoid tissue disappears from the adenoid mass during adolescence, these adhesions remain and bind the mucous membrane of the posterior wall and vault of the naso-pharynx to the Eustachian eminences. When the adenoid is removed during *deep* anesthesia, when the pharyngeal reflexes are absent and when there is no contraction of the pharyngeal musculature to force the adenoid mass through the ring of the adenotome, the instrument pushes aside the Eustachian eminence and, with it, the adherent lateral comb, so that these are apt to be left behind and only the central portion of the adenoid mass is removed.

These adhesions can be easily recognized in the post-nasal mirror. They appear as short, thick, dense adhesions, binding the posterior pharyngeal wall to the tip of the Eustachian eminence and to the posterior lip. Between the adhesions, round or oblong openings mark the entrance to the fossa. They are sometimes so numerous as to present a continuous surface, so that from one Eustachian orifice to the other, the mucous membrane appears to be continuous and there is no sign of the usual deep fossa of Rosenmüller.

Now, the Eustachian eminence is composed of cartilage, which is comparatively unyielding, while the mucous membrane of the posterior wall and of the vault, is only loosely attached to the underlying structures, so that it is not the Eustachian eminence but the mucous membrane, which is displaced. The mucous membrane of the posterior wall and of the vault are brought down to the level of the Eustachian eminence, a distance of nearly three-quarters of an inch. The mucous membrane is sometimes stretched between the two eminences, so that both fossae and the space between them are obstructed. The degree of obstruction caused by this condition, is fully equal to that caused by the original adenoid mass. It happens, in short, that adults complain of nasal obstruction, in whom no obstructive lesion of any kind is found in the nasal passages, or in whom such obstructive lesions as may have been present, have been satisfactorily removed by proper surgical measures. If the naso-pharynx is examined in these patients such adhesions will be found to be present in some of them, and the removal of these adhesions will relieve the obstruction. In young adults, whose tissues have not lost their elasticity, the mucous membrane recedes as soon as the adhesions are severed; and the relief of the obstruction will be immediate and prompt. In older persons, it may be necessary to prevent the reformation of these adhesions, it is desirable to make applications of silver to the cut surfaces, through the direct naso-pharyngeal speculum. Massage can be carried out with the aid of the applicator at the same time. When healing is completed, the appearance of the naso-pharynx is entirely changed. It is deeper and higher than before, and the deep recesses of the fossae of Rosenmüller are distinctly visible.

The presence of secretion in the fossa of Rosenmüller is of interest to the rhinologist as well as to the otologist. For the Eustachian eminence is a wall around the Eustachian orifice and the fossa of Rosenmüller is a gutter surrounding the wall whose combined purpose is to guide the nasal secretions away from the Eustachian orifice. But when the fossa is a deep one, the secretions do not readily escape from it into the lower pharynx. The reason for this will become evident upon consideration of the anatomy of this region.

The pharyngeal wall is composed of three layers—mucous membrane, aponeurosis and constrictor muscle. The upper fibres of the superior constrictor arise from the lower half of the posterior border of the internal pterygoid plate; sometimes accessory bundles

arise from the upper part of the pterygoid plate, and even from the base of the skull, at the anterior margin of the middle lacerated foramen. These fibres descend to the level of the tip of the Eustachian eminence, and curving around underneath it, ascend again, and, together with similar fibres from the opposite muscle, are inserted into the basilar process of the occipital bone, near the median line. Above and to the outer side of these fibres, the pharyngeal aponeurosis is not supported by muscle fibres. The aponeurosis, however, extends outward for a considerable distance; in fact, as far as the quadrangular plate of bone which arches over the canal for the carotid artery. The triangular area which is thus left free of muscle fibres is known as the sinus of Morgagni, and corresponds exactly to the space within the naso-pharynx which we call the fossa of Rosenmüller.

Anteriorly the fossa is limited by the salpingo-nasal fold, a fold of mucous membrane which extends upwards from the tubal eminence to the vault. It contains the accessory bundle of muscle fibres belonging to the origin of the superior constrictor, when these are present. This fold does not extend as far inward as the tip of the eminence, and so cannot always be seen by means of reflecting instruments. It can be seen through the direct speculum. It is sometimes so thick that it limits considerably the extent of the fossa of Rosenmüller in the anterior direction, and shuts it off from communication with the posterior nares. When this fold is well developed, the fossa has the shape of a narrow, tubular cavity.

Inferiorly, when the pharynx is at rest, the fossa opens directly into the groove between the posterior lip of the tube and the posterior pharyngeal wall.

During the acts of swallowing, gagging and gargling, the muscles of the pharynx contract, causing the contents of the naso-pharynx to be expressed into the oropharynx, and to appear below the soft palate. When the secretion is a thick and viscid mucus, which does not readily obey the forces of gravity or capillary attraction, this active contraction is necessary to secure drainage. This aid to drainage does not apply, however, to the fossa of Rosenmüller; for the fossa of Rosenmüller is the only part of the naso-pharynx which is not supported by muscular fibres, so that muscular contraction cannot empty the fossa. On the contrary, when the superior constrictor contracts, its upper fibres, which, as described above, form a sling around the tubal eminence, draw the mucous membrane of the posterior wall against the tubal eminence, and close the fossa. When the beak of the direct speculum holds the

tubal eminence forward, the contraction of the muscle causes the formation of an oblique ridge of mucous membrane on the posterior pharyngeal wall. The contraction of the salpingo-pharyngeus helps the superior constrictor in closing the fossa below, while the accessory bundles of the constrictor move the salpingo-nasal fold backwards, so that the entrance of the fossa becomes puckered up into a round or oval opening about a quarter of an inch in length. Thus the fossa of Rosenmüller may sometimes become effectually closed up during the contraction of the pharyngeal muscles, and its secretions actively dammed back. If a probe be passed through the opening, it will enter for a distance of nearly an inch, and the fossa, instead of being merely a corner of the naso-pharynx, becomes converted into a large, wide cavity, having the characteristics of an accessory cavity of the naso-pharynx.

The presence of secretion in the fossa of Rosenmüller, is always suggestive of nasal sinus disease. When the secretion is purulent, it is easily seen. But when it consists of strings of clear viscid mucus, pouring down over the tip of the Eustachian eminence in front of the salpingo-nasal fold, it indicates the presence of a catarrhal inflammation of one of the posterior group of accessory sinuses; and, in my experience, it is sufficiently characteristic to warrant operative interference. When the secretion is present behind the salpingo-nasal fold, it cannot be regarded as having the same significance. This is particularly true if there are adhesions present between the posterior lip and the posterior pharyngeal wall, and it is to this class of cases that I wish particularly to call attention.

The presence of these adhesions converts the lower part of the fossa of Rosenmüller into a pocket, in which secretion can accumulate. As the pocket becomes filled up, the secretion overflows and pours down the posterior pharyngeal wall. It occasionally decomposes and gives rise to a foul taste and a foul odor. As the secretion may be forced into the nasal cavity during the act of blowing the nose, all the classical symptoms of chronic sinus disease are reproduced. Yet when the adhesions are cut and the drainage of the fossa restored, all the symptoms disappear. In this connection I may also mention the case of a woman who had complained for a long time of a foul smelling breath and a bad taste. Sinus disease had been eliminated by all the rhinologists who had seen her, and the diagnosis of parosmia of nervous origin was made. When the adhesions which closed the fossae on both sides were severed, a small quantity of secretion was evacuated,

whose foul odor was distinctly perceptible. The so-called parosmia was permanently relieved.

The presence of these adhesions converts the fossa of Rosenmüller into a sort of cavity and the symptomatology of such a condition would not be complete without mentioning the possibilities of general systemic infection resulting therefrom. However, the pockets are rarely so completely closed, that the secretion is under pressure and absorption is, therefore, not the rule. Recently, however, I saw a patient who for years has been suffering from chronic rheumatism. Every possible source of focal infection had been carefully eliminated. On one side the fossa of Rosenmüller was completely closed by adhesions, behind which a thick, glairy mucus had accumulated. A culture, made from the tissues removed in cutting these adhesions, showed the presence of the streptococcus viridans in pure culture. The case is of too recent date, however, to be regarded as a proven case of focal infection.

The interior of the fossa of Rosenmüller is not very sensitive to manipulation, but the Eustachian eminence, itself, seems to be well supplied with sensory nerves. Nevertheless, it was somewhat of a surprise to me, to meet with a case in which a reflex cough had its origin in this region. The case was that of a young lady who stated that about five years previously, her adenoids had been removed because of nasal obstruction. She declared that the obstruction was not completely relieved by the operation and that ever since that time she had been suffering from a dry hacking cough without expectoration. She had been treated by numerous specialists during this time, including myself, without relief. When the adhesions which bound the posterior wall of the naso-pharynx to the posterior lip of both tubes were cut, not only was the breathing improved but the cough ceased at once. Perhaps this case is unique, but the thought occurs that if one kind of reflex neurosis may have its origin in this region, it is not impossible that other cases may be found in which nasal or laryngeal reflex neuroses originate in the same place.

It is without doubt true that not all persons in whom pathological changes in the fossa of Rosenmüller are found, necessarily suffer from all or even from any of the above group of symptoms. But the fact that there are patients who complain of rhinological or laryngological symptoms without ear symptoms, in whom the only pathological lesions that can be found are those in the fossa of

Rosenmüller, who can not be relieved until the drainage of the fossa is restored, is the burden of this communication.

To conclude, then, diseased conditions of the fossa of Rosenmüller may give rise to:

1st. A degree of nasal obstruction equally as great as that caused by hypertrophied adenoids; and persistent nasal obstruction after the removal of large masses of adenoids may be explained thereby.

2nd. Secretion pouring over the tip of the Eustachian eminence, when in front of the salpingo-nasal fold is indicative of disease in the posterior group of nasal accessory sinuses. Secretion in the fossa of Rosenmüller behind the salpingo-nasal fold, particularly when associated with adhesions in this region, may cause a clinical picture closely resembling disease of the accessory sinuses even though the latter are entirely free from pathological changes.

3rd. It is not impossible that a fossa whose drainage is obstructed may be the focus of a general systemic infection.

4th. Reflex nasal and laryngeal neuroses may have their origin in this region.

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Throat Lesions in Leprosy. J. A. HONEIJ, *New Orleans Med. and Surg. Jour.*, July, 1917.

The oral cavity is early affected. In none of the cases, even in those with signs barely diagnostic of leprosy, has the palate failed to show some inflammation and ulceration, usually situated on the sides of the raphe line, close to the uvula. In some of the healed cases there has been total destruction of the pillars and contiguous structures, giving a smooth, cave-like appearance to the throat. The tongue in some cases showed marked hypertrophy of the raphe and papillae, with an increased depression of the groove. There is little, if any, change in the gums or teeth.

The laryngeal structures (cartilage, mucous and submucous tissues) are attacked in most cases. Of three cases coming to autopsy, the trachea was attacked in two cases in its upper third. The lungs were not affected in either of the three cases.

Inflammation and destruction of the tissues of the nose is well known. Loss of smell occurred in only one case. Ed.

NASAL SEPTUM DEFORMITY IN CHILDREN. A STUDY OF 314 CHILDREN.

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At the present time it would seem that an apology is almost necessary for any publication dealing with deformities of the nasal septum. However, much that has been written, concerning the cause of deviation of the nasal septum and the operations and modifications of operations that have been devised for its correction, there has been very little attention paid to its occurrence in children.

Zuckerkindl, in discussing the causes of septal deviation said, that it did not occur before the seventh year, that is, before the developments of the jaw with the second dentition. Later he modified his statement in so much as to say that he had found, in the examination of 35 skulls of children between four and six years of age, one with a well developed deviation and a spur. He also quotes Wetschler as having observed deviations in children of four and five.

Zuckerkindl contends that abnormal development of the bones of the face, at the time of the second dentition, has an etiological bearing. This can possibly be accounted for by the fact that the upper jaw in civilized man is much smaller than in his forebears. The high or gothic type of palate, usual in infancy, persists oftener and there is not room for the larger teeth of the second dentition. The result is a crowding upward of the vomer and a buckling of the thin bony and cartilaginous partition. In reality the jaw does not expand sufficiently for the palate to flatten out and leave room for the septum to develop downward. There are some facts which seem to bear out this hypothesis. Septal deviation is more common among Europeans than in the less civilized races—savages and negroes. On the other hand, in children presenting themselves to the dental surgeons with malocclusion of the teeth, usually individuals with extreme under-development of the jaws, the septum is almost always deviated.

Trauma plays a much less important part in the etiology of deviated septum than is thought by some. In some instances after fracture of the septum, there is seen extreme deviation of the cartilage without any spur formation whatever. In other cases there

is only slight deviation of the cartilage with the development of large spurs. These bizarre findings can be explained only on the ground that there are in some individuals who give histories of fracture, deviations prior to the injury.

In reference to trauma as a cause of septal deviation, an attempt was made in the cases here reported from the clinic, to elicit information on this point. In only one case, where there was a distinct deviation, did the mother admit that the child had injured his nose. This was in the seven-year-old boy, the oldest of the series. Of course, this is very inconclusive evidence, as the class of patients among whom these observations were made is not in a position to have constant supervision over its children and only the grosser accidents are noticed and remembered and in all probability only a proportion of those. It does not, therefore, preclude the occurrence of those minor injuries to the nose, which may, according to Bosworth, set up a low grade of chronic inflammation, resulting finally as he claims, in a true deviation with or without a wide crest or spur.

It has been held that the chronic rhinitis, with its more or less frequent acute exacerbations, that accompanies the presence of large adenoid vegetations in the nasopharynx may have an etiological bearing on the development of deviated septa. Others, notably Talbot, maintain that deviation of the septum is part of a general underdevelopment, on a basis of degeneracy, and that the underdevelopment of the superior maxilla, the deviation of the septum, the high-arched palate and the presence of hypertrophied adenoid vegetations and the enlarged tonsils, found in many of these individuals, are all manifestations of the same sub-normal tendencies. Robert, cited by Gradenigo, believes that the presence of large adenoid vegetations, causing mouth breathing, tends to an underdevelopment of the nasal cavity as a whole—an atrophy of disuse.

Yankauer says that all deviations of the septum are variations of one form. The highest point or apex of the deviation is at a point which corresponds to the meeting place of the sutures between the cartilage, the anterior nasal spine, the perpendicular plate of the ethmoid and the vomer. From this apex the septum slopes down anteriorly, posteriorly, superiorly and inferiorly. The different types of deviation that have been described are merely variations in the angles and extent of these slopes. From these observations he advances the theory that the suture lines play the same role in the development of the nose that the epiphyseal lines do in the development of the long bones. The nose being usually narrower on

one side the inspired air will impinge more sharply on the septum on that side and, acting as an irritant cause, a congestion and increased blood supply and consequently an ever-increasing thickening and development of bone on that side.

The bones of the septum are, however, laid with separate centres of ossification for the different bones. The centres are at points away from this meeting place of the sutures and the bone is laid down from the centres toward the edges of the bone. The parts adjacent to the sutures are the last to become ossified and the whole septum is bent toward that point because it is the last to remain soft and susceptible to the considerable negative pressure exerted by the air as it is inspired through the narrower side of the nose. This accounts for the slopes falling away from the common meeting point of the sutures.

In the children that form the basis for these observations it was noticed that many had slight thickening of one side of the septum or the other. It is quite probable that later these thickenings might develop into true deviations. That is, the tendency for one side of the nose to be narrower than the other would make the wide side the one through which the greater volume of air was inspired and thus tend to accentuate the deviation. These cases were not classified as deviations. Only in those children where there was a definite deviation with or without a spur was it put into that category. Spurs were noted in several instances and in some children hypertrophy of the lower and middle turbinate bones was observed.

There were two groups of children examined. The larger group of two hundred and twenty children was seen in the out-patient departments of Mount Sinai Hospital; the remaining ninety-four children were inmates of one of our institutions. The groups are kept separate because the findings were a little different and the question of environment as a factor in the development of these nasal deformities was brought to mind.

Of the children seen in the Mount Sinai Dispensary some came into the pediatric department but the majority were brought directly to the ear, nose and throat clinic for some throat or ear trouble. This may account, in part, at any rate, for the large number of hypertrophied tonsils observed. Many of the children came for acute or chronic otitis, though no record was made of this fact. Some came because they had enlarged tonsils and adenoids and a few were perfectly well, having been brought with other children that were ill.

In this group two hundred and twenty children were examined. While this is scarcely a large enough number from which to draw definite conclusions, still it can, in a general way, point out the conditions, barring very unusual ones that would ordinarily be met. Records were kept of the age and sex of the children, of the condition of the septum, of the turbinates, of the palate and of the condition of the tonsils. The number of teeth was noted and a record was kept of the birth-place of the parents. Practically all of the children were born in the United States.

The youngest child in this series was five weeks old, the oldest, seven years. The majority of the children ranged in age from two months to four years. There were ninety-nine children in the first year of life. Forty-two under six months and fifty-seven between six and twelve months old. Between one and two years of age there were fifty-seven children, between two and three there were thirty-eight. Twenty children were between three and four years old. From the fourth to the fifth year there were four children and one each in their sixth and seventh years.

The sexes were about equally divided, there being one hundred and fourteen boys and one hundred and six girls.

In the examination of the septum a distinction was made between deviation and, what for want of a better term was called "thickening." These were really very slight deviations and in this group were included those septa that appeared to encroach, to a greater or less degree, on one side or the other, while on the opposite side they were straight or almost straight. In these noses the width of the common meatus was reduced on one side, that of the encroachment, but was not unduly large on the other. In those cases included in the category "deviation" there was a true deviation of the septum with, in some cases a distinct spur formation.

There were one hundred and eight children who showed deformities of the septum. Of these, sixty-five were classed as thickening and forty-three as deviation. This gave an incidence of over forty-nine per cent (49%) of septal deformities, twenty per cent (20%) of frank deviation and almost thirty per cent (30%) that showed a tendency toward the later development of deviations. Excluding those children over four, of whom there were only six examined, the results were not much different. Out of two hundred and fourteen in the first four years of life, one hundred and five were found to have deformities of the septum or forty-nine per cent (49%) of which forty or about eighteen per cent (18%)

were true deviations and sixty-five or thirty per cent (30%) had thickened septa.

Analyzing these in groups according to age, there were, out of the ninety-nine children one-year-old and under, thirty-two or about thirty-two per cent (32%) who had already developed noticeable abnormalities of the septum. Eight of these were true deviations; one of them in a seven-months-old boy, having a well developed spur and another, a boy of four months having a superior deviation.

In the children examined, who were six months old or younger, four deviations were found and five thickened septa. The youngest child to show any abnormality was eleven weeks old. This child had a fairly well marked thickening to the left. The youngest child seen with a deviation was three months old.

It might be suggested that deviations or abnormalities of the nose in children as young as these were congenital. Our observations in these cases disprove this. In the further examination of the children it was found that the proportion of deviations and thickenings of the septum increased as the children grew older. It would seem, then, more reasonable to suppose that the cause of these abnormalities, whatever it may be, is one that begins to operate very soon after birth, perhaps even before, and already shows its results in the early years of life. All of these children were seen in the out-patient department of the hospital and were for the greater part from crowded tenement districts of the city, living usually in poorly ventilated and often in over-crowded quarters. While this is not offered as the explanation for their deformities, it undoubtedly has an etiological significance. Whether the same proportion of deflections would be seen in children living under better conditions is questionable. The other series of children examined while only limited in number and drawn from children that were originally situated, much the same as these show a slightly smaller proportion of deformities.

During the second six months four deviations and nineteen thickened septa were observed. This is a proportion of nine per cent (9%) of deviations and eleven per cent (11%) of thickenings for the first half year of life and seven per cent (7%) of deviations and thirty-three and a third per cent ($33\frac{1}{3}\%$) of thickenings for the second half year.

In children from one to two years of age, there were eight deviations and twenty-two in whom the septum was thickened out of a

total of fifty-seven children, making fourteen per cent (14%) of deviations and forty-five per cent (45%) of thickenings or sixty per cent (60%) of septal abnormalities.

During the next year, from two to three there were, out of thirty-eight children, thirteen or thirty-four per cent (34%) with deviations and twelve or thirty-two per cent (32%) with thickening of the septum, a total of sixty-five per cent (65%) of abnormalities.

Between three and four years of age there were eleven deviations and three thickened septa, out of twenty children examined, making fifty-five per cent (55%) of deviations and fifteen per cent (15%) of thickenings or seventy per cent (70%) of abnormalities.

It is noticeable that the proportion of true deviation increases from eight per cent (8%) in the first year to fifty-five per cent (55%) in the fourth and that the thickened septa, which are twenty-five per cent (25%) in the first year and forty-five per cent (45%) in the second, fall to thirty-two per cent (32%) in the third and fifteen per cent (15%) in the fourth. This is, in all likelihood, due to the fact that many of those septa, which in the first two years of life show a tendency to become deviated, have already progressed to a frank deviation by the time that the child has reached his fourth year.

In contra-distinction to the large numbers of departures from the normal in the septa of the children in this series, there were few in whom abnormal turbinates could be found. In the two hundred and twenty children there were twelve in whom hypertrophy of the lower turbinate was noted. One of these was in a five-year-old and another in the seven-year-old boy. Deducting these two, there were in the two hundred and fourteen children under four years of age ten in whom there were enlarged lower turbinates or less than five per cent (5%). These were distributed as follows: one each in the first and second years, four in the third year and four in the fourth. The youngest child, in whom hypertrophy of the lower turbinate was noted, was eight months old.

Hypertrophy of the middle turbinate was observed ten times or a little over four per cent (4%). There were two children under one year of age with enlarged middle turbinates, one seven and one eight months old. There was one child in its second year and five between two and three. The remaining two were in their fourth year.

In all but one of these children the enlargement of the turbinates was associated with thickening or deviation of the septum.

Of the twelve hypertrophied lower turbinates there were nine that had deviated septa and two in whom the septum was thickened. There was one child, a girl of four, with a well-marked hypertrophy of the lower turbinate and a perfectly straight septum. Eight of the children with hypertrophied middle turbinates had deviated septa, while thickening was observed in the remaining two. These might be considered as examples of what Zuckerkandl describes as the "compensatory" form of septum deviation. Baumgarten advances the theory that the hypertrophy of the lower turbinate causes the septum to be pushed to the opposite side. Zuckerkandl does not agree with this contention on the ground that the turbinate never grows beyond the mid-line and that further, the greatest deviation is not at the same point as the greatest hypertrophy of the turbinate. He believes, however, that there may be some connection between hypertrophy of the middle turbinate and deviation of the septum. Neither of these theories seem to be substantiated by an examination of this series of children. Out of one hundred and eight septal deformities there were but twenty-two with involvement of the turbinates, a number entirely too small if the hypertrophy of either the lower or the middle turbinates was a factor in the causation of septal deflection. It is much more likely that where the deformity of the septum is associated with changes in the turbinates that the latter are an effect rather than a cause of the deviation, or, perhaps, simply a part of the general mal-development that has the deviation as one of its results.

Almost every one of these children had high-arched palates, the type normal in infancy. In certain instances it persists into adult life and often these individuals have faulty occlusion or irregular implantation of the teeth. An attempt has been made by some writers (Trendelenberg and Freeman), to give the persistence of this type of palate an etiological relationship to septal deviation. Ballenger quotes Freeman, who found in three hundred and two individuals with high-arched palates, two hundred and ninety or ninety-six per cent (96%) with deviation of the septum. Others consider that the persistence of the high palate and the presence of the deviation are part of the same condition—an under-development of the upper jaw.

In the examination of these children the palates were classed as "high" and "low." By high palate was meant the usual type of infant palate with a "V"-shaped arch. Those that more nearly

approached the adult palate in appearance, were classed as low. Of this kind there were twenty-five or a little over eleven per cent. (11%).

Of the children with low palates, twelve had thickened septa and one had a deviation, so that if any significance is to be attached to a relationship between the shape of the palate and deviation of the septum, it is not that of cause and effect.

One of the most interesting points in the study of this group of children was the question of relationship, if any, between the deformed septa and hypertrophied tonsils. It would appear at first glance, that an unusually large number of these children were possessed of hypertrophied tonsils. It must be remembered that most of them were examined in the laryngological clinic, either because of their enlarged tonsils or for some other condition of the throat or ear of which hypertrophied tonsils are an accompanying part. The environment of the children, which is one to foster and aggravate catarrhal conditions of the upper air passages, may also furnish a reason for the large number so afflicted.

The cases fall naturally into four groups, those with simple hypertrophy of the tonsils, those where the tonsils are enlarged but buried beneath the pillars in the lateral pharyngeal wall, those with small tonsils and those whose tonsils have already been removed. In the latter group the presumption is fair that the tonsils were enlarged or diseased. In the first two groups the indications were for the removal of the tonsils. In the third group they were perfectly normal and no indication for their removal existed. Whether the removal of the tonsils and adenoids in those children whose septa are thickened would, by clearing up the accompanying chronic rhinitis, have a deterrent effect on the progress of the slight deformity of the septum, into a patent deviation, is something that cannot be foretold but it would seem, from an examination of the figures quoted above, that the increase of deviations and the decreases of slight septal deformities, through the same period, in the same group of individuals, shows that the chronic rhinitis has a bearing on the causation of the deviations and that the removal of the tonsils by lessening the incidence of chronic catarrhal rhinitis or by mitigating the severity of the process, once it is established, would save a number of these children from future septal deviations.

Thirteen children of the two hundred and twenty had their tonsils removed. In twenty-seven of the children the tonsils were

normal in appearance, small, and there was no reason for their removal. Of the remaining one hundred and eighty children, one hundred and twenty-eight had simple hypertrophy of the tonsils, while in fifty-two the tonsils were both hypertrophied and buried. Eighty-two per cent (82%) of all the children had tonsils that were enlarged.

There were one hundred and eight children with septal deformity and one hundred and twelve without. Of the first group, ninety-three or eighty-five per cent (85%) had hypertrophied tonsils. Eight children, who had had their tonsils removed, had septal deformities of some degree. It is fair to assume that their tonsils were not normal. Added to the above figure we get one hundred and one children of one hundred and eight with enlarged tonsils, an incidence of ninety-three per cent (93%). Of the second group, children free from septal deformity, there were eighty-seven or seventy-seven per cent (77%) with hypertrophied tonsils. Looking at it from the other standpoint, that of hypertrophied tonsils, we find, again, ninety-three out of one hundred and eighty or almost fifty-two per cent (52%) with septal deformity against five out of twenty-seven or eighteen per cent (18%) in the group with small tonsils, as having deformity of the septum. These latter figures are, of course, entirely too small to form the basis of any definite conclusion and are simply given as they occur in this series. Still, taken together with the other observations, they would seem to show that there is more tendency for these two conditions to occur together than separately and that apparently there is a common etiological factor for them. This would seem to be the chronic rhinitis incident upon the slight narrowing of one side of the nose and the increase of the deformity by the vicious circle thus started.

The mechanism of the vicious circle begins with a nose, one side of which is narrower than the other. A certain degree of chronic rhinitis having been established there is a tendency for the overgrowth of the adenoid vegetations and the tonsils and also for an increase in the deformity of the septum that was the original cause of the rhinitis. These conditions, in their turn, tend to foster the rhinitis. The removal of any one of the factors lessens the rhinitis and thus benefits the patient by the absence of an aggravating element to the vicious process. The removal of the tonsils therefore, as stated above, would have a beneficial effect upon the nasal condition, aside from any other indication for their removal.

A record was kept of the nationality of the children to determine, if possible, whether or not there were any racial characteristics that would explain any of the observations that were made. The preponderance of children of Russian and Austrian Jewish parentage was so great that there were too few representatives of other racial groups to enable any observations on that score to be made. There were one hundred and sixteen children of Russian forebears and forty-one with Austrian parents. These people are of the same race and have about the same characteristics. The remaining sixty-three were made up of twenty Italians, six whose parents were born in Ireland, two Jewish Turks, three negroes from the British West Indies and thirty-two whose parents were native born. Those with American parents were about equally divided between Irish and Russian descent.

The deformities were so evenly distributed between the children of the different strains that it can safely be said that, given the same environment, no racial propensities can be noticed.

To see whether children living in a different environment would show different results, ninety-four inmates of one of our large homes were examined. They ranged in age from six months to five years. They live under excellent surroundings, spend a large part of their time out of doors, sleep in spacious well-ventilated rooms and are guarded against the errors in diet, familiar to anyone who has worked among children, such as constituted our first series.

In this group there were thirty-eight septa that departed from the normal—forty and one-half per cent (40.5%); twenty-four or twenty-five and a half per cent (25.5%) were thickened and fourteen or fifteen per cent (15%) were true deviations.

Only one child had large turbinates.

Seventy-one children, seventy-five and a half per cent (75.5%) had enlarged tonsils. Of these, thirty-one were simple hypertrophies and forty both hypertrophied and buried. The remaining twenty-three children had small tonsils. None of these children had had their tonsils removed.

Comparing the findings in the two groups of children, one notices a smaller percentage of nasal deformities, both thickening and true deviation as well as a smaller percentage of enlarged tonsils. Inasmuch as these children are for the most part of the same parentage and were, most of them, born under the same surroundings as the dispensary children and lived in the same environment

The large number of septal deformities found, is rather surprising—more than was expected when the examinations were first undertaken. Significant facts are the tendency for the deformities to occur, together with enlarged tonsils and the decrease of thickened septa and increase of patent deviations as the children become older. Taken together with the rhinitis found in so many of these children, the septal deformity, as stated above, would seem an additional indication, aside from any others, for the removal of even slightly enlarged tonsils.

Septum

	Sept.	Deform.	Thickening		Deviation		Hyp.	Tonsils
Institution ..	38	40.5%	24	25.5%	14	15%	71	75.5%
Dispensary ..	108	49 %	65	30 %	43	20%	180	82 %

616 Madison Avenue.

A METHOD OF MEDICATING EUSTACHIAN BOUGIES.*

DR. LEE M. HURD, New York City.

The Eustachian bougie has been advantageously used for over thirty years to dilate tubal stenosis and stimulate the lining membrane.

Feeling the necessity of medicating the tube at the time of bouginage, several methods have been advanced.

First. Dipping the bougie in an aqueous solution of silver or iodine.

The disadvantage of this method is that the medicament does not stick to the bougie, being rubbed off either in the catheter or at the mouth of the tube.

Second. Coating the bougie with a heavy base, such as lanolin. This, again, is as easily rubbed off as the aqueous solutions.

Third. The use of a wire bougie, such as a Holmes or a Yankauer, wrapped with cotton.

This is a much better method, but with the disadvantage that a considerable portion of the solution, into which the bougie has been dipped, is squeezed out as the bougie advances into the tube, as well as the difficulty of properly adjusting the cotton on the bougie to the size required for the particular tube in question.

The simple method, which I have used for fifteen years, has the advantage of placing the drug used where you want it and on the exact size of bougie you wish in the particular case.

Celluloid bougies are used, which are coated with silver nitrate, using gum acacia as a base.

Method of preparation. In a narrow test tube, make a saturated solution of gum acacia in a water bath, then add the silver nitrate solution, making the solution from 1 per cent to 10 per cent strength of silver as desired.

The bougie is dipped about one and one-half inches into this solution, and when the bougie has a uniform coating, it is placed to dry; then I usually give the bougie a second coating. When dry, the gum acacia and silver coating looks and feels like varnish to the dry fingers.

The silvered bougies can be made up in quantities, and when kept dry, will last fairly well for a week or more.

The one disadvantage of using bougies several days old is, however, that the silver nitrate will gradually oxidize, so that the

*Read before the American Laryngological, Rhinological and Otological Society, at Atlantic City, N. J., June 1, 1917.

coated bougies, a week or more old, may have lost half of their silver nitrate per cent.

I generally use them the second or third day after preparing them.

Method of introduction. A plain gum elastic or celluloid bougie, of the proper size, is passed through the tube to make sure of the position of the catheter and the size of the bougie the tube will admit and also to dilate the tube, then the plain bougie is withdrawn, and the coated bougie can be readily passed as far as desired and remain there about two minutes to allow the moisture of the membrane to dissolve the gum and deposit the silver where desired, knowing that a definite per cent of the silver nitrate has been deposited.

When the bougie is withdrawn, the gum coating will be entirely gone or only a little stickiness will be felt.

The pathology of the tubal mucosa is practically the same as that of the nasal pharyngeal mucosa, acute congestion, chronic hyperplasia, chronic hypertrophy, etc.

The vast majority of tubal stenosis will readily yield to the use of the unmedicated bougie, but some cases of hyperplasia and hypertrophy relapse to their former condition, and the plain bougie fails; then the bougie varnished with gum acacia and silver nitrate will reduce the swelling.

Results. One or four per cent is usually strong enough to contract the membrane; if not, the strength can be increased up to ten per cent.

The stronger percentages should be used cautiously if it is necessary to pass the coated bougie beyond the isthmus, as several times, I have produced a serous exudate which drained into the tympanum, producing tinnitus and diminishing the hearing for several days.

I have never had pus form in the middle ear, nor had to incise the drum membrane for relief of the exudate.

The weaker silver nitrate percentages produce no discomfort, but sometimes the stronger percentages will give annoyance and cause some pain, referred to the ear, similar to the discomfort produced in the nose by 10 per cent silver nitrate.

Ultimate results, naturally, vary. Some tubes remain perfectly patent, while others relapse after a time, and require a repetition of the treatment.

15 East Forty-eighth Street.

SALIVARY CALCULUS; REPORT OF A CASE.*

DR. WILLIAM WESLEY CARTER, New York City.

Since salivary calculi of sufficient size to require removal by surgical means are comparatively rare and as this report is a personal experience, I feel that the subject may be of sufficient interest to bring before you to-night.

About two years ago I was seized with a sudden stinging pain on the right side of my tongue; the floor of the mouth on this side became swollen, the swelling increasing very rapidly on taking food, and subsiding a short time after the meal. With the aid of a mirror I soon discovered a small calculus obstructing the mouth of Wharton's duct. I cocaineized this area, and with a small bistoury removed a stone about the size of a mustard seed. My symptoms disappeared and I had no further disturbance of this nature until Feb. 22, 1917, when I suddenly had a very severe pain under the angle of my right jaw. The pain was burning in character and radiated towards the tip of the tongue. The submaxillary gland on that side began to swell rapidly and was exquisitely tender. On attempting to eat, the pain became almost unbearable and the swelling beneath the jaw increased remarkably, extending down into the neck. I recognized at once that a salivary calculus had obstructed the duct, probably very close to the gland. By di-digital palpation I could distinctly feel the calculus below and about opposite the last molar tooth. I immediately asked Dr. Caldwell to make an x-ray plate of the affected area. In the plate are shown very distinctly a large pear-shaped calculus and just below it two smaller calculi. On Feb. 25, under local anesthesia, Dr. A. J. Brown removed the stones through an incision in the floor of the mouth. The largest of these stones is about the size of a cherry pit, the small ones are about the size of mustard seeds.

Owing to the restricted space in which one has to work, and the necessity for avoiding the important vessels and nerves which are in close proximity to the duct at its origin from the gland (as shown in the diagram), and owing to the extreme mobility of the tissues in the floor of the mouth and the difficulty in controlling the movements of the tongue, the removal of a stone from this locality is a

*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, March 28, 1917.

difficult operation and one requiring a high degree of skill on the part of the operator and a great amount of patience and forbearance on the part of the patient.

Operation through the floor of the mouth is advisable in all cases unless there is an external fistula or an abscess of the gland, in which case an external operation will probably be required. If the calculus is lodged near the mouth of the duct, it may be possible to remove it by dilating the canal. If in the course of the duct, however, it is best to make a longitudinal incision over the stone and remove it through the slit. Some authors speak of probing the duct and dilating it, but I am quite sure that those of you who have tried to probe Wharton's duct will agree with me that it is a difficult, very often impossible thing to do.

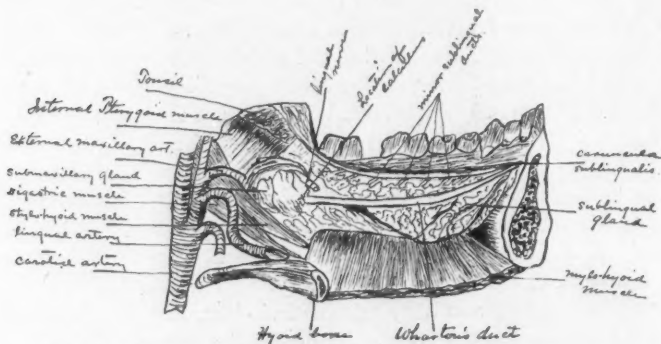


Fig. 1. Relations of Wharton's duct to surrounding structures.

When the stone is located in the gland itself, or at the beginning of the duct, as in my case, the proper procedure is to administer hypodermically $\frac{1}{4}$ gr. morphine and $\frac{1}{150}$ gr. atrophine. Then cocaineize thoroughly the affected area superficially and deeply. Have the patient lie on the affected side and protrude the tongue to the opposite side of the mouth. Carefully locate the stone by bidigital palpation, then have the patient push the gland forward and upward, by placing his thumb under the angle of the jaw. This not only brings the stone within reach of the operator, but it stabilizes the very mobile tissues of this region and makes the operation much easier and safer. The tissues immediately over the duct are fixed by means of a pair of forceps and an incision is made down to the stone, which is then grasped with forceps and removed. In making the incision, which is quite deep, care must be taken not to injure the

lingual nerve, the maxillary artery, or the facial artery; all these lie in close proximity to the gland at this point.

The wound should be left open and should be frequently irrigated with an antiseptic solution, as infection in this locality is to be avoided if possible.

The wound in the duct, as in my case, usually closes without an internal fistula, the latter would be of little consequence even if it did occur.

After apparently almost immediate recovery from the operation, there occurred in my case an unexpected complication, and one which I have not seen mentioned in the literature: On the third day after the operation the opposite submaxillary and both of the sub-



Fig. 2. Radiogram of Salivary Calculus.

linguals became sympathetically involved, and for four or five days I was completely incapacitated, being unable to take any solid food whatever. The parotids did not participate in this salivary riot.

At present, recovery from the attack seems to be complete.

Sixty per cent of salivary calculi are said to be found in the submaxillary gland, twenty per cent in the parotid and twenty per cent in the sublinguals. The stones are usually found in Wharton's duct. In this location they are generally round or cylindrical. When found in the gland they are usually larger, irregular in shape and are apt to be multiple.

Salivary calculi are composed of both organic and inorganic matter. The organic matter consists chiefly of bacteria and epithelial debris. The inorganic matter consists of the salts found in the

saliva—the phosphates and carbonates of calcium, potassium and magnesium.

Calculi, according to various authors, occur from two to five times more frequently in males than in females. They are usually met with in middle life, and very rarely occur in children.

The following have been mentioned as predisposing factors in the formation of salivary calculi: (1) General or local conditions, causing a change in the character of the secretion. (2) The entrance of foreign bodies into the ducts, these serving as a nidus for the formation of the calculus. (3) A local inflammatory process, a clump of bacteria serving as a nidus around which is deposited in lamina the salts of the saliva.

The latter theory I am inclined to accept, for in practically all calculi that have been examined have been found clumps of bacteria; this would seem to point to an inflammatory origin.

The prompt removal of calculi, especially if they are located in the gland, should be urged, not only on account of the pain connected with the presence of the stone, but because of the liability to abscess formation which may result in cellulitis, a condition always to be dreaded in this locality.

69 West Fiftieth Street.

Typhoid Meningitis. S. BAYNE-JONES, *American Jour. Med. Sciences*, July, 1917.

The report describes a case of purulent cerebrospinal meningitis due to bacillus typhosus, occurring in the fourth week of a typical case of typhoid fever. The outcome was fatal within a few days after the onset of the meningitis. Lumbar puncture done during the convulsions gave a turbid greenish-yellow fluid under pressure of more than 200 mm. of water. The cells formed a pavement of pus when spread on a microscopic slide. In stains for bacteria no organisms of any sort were discoverable. Cultures of the spinal fluid yielded bacillus typhosus alone, which gave the typical cultural reactions of the typhoid bacillus and was agglutinated by a dilution of 1 to 3200 of the serum of a rabbit immunized with the laboratory's strain of *B. typhosus*.

Ed.

STENOSIS OF THE NASO-PHARYNX OPERATION WITH PROSTHESIS.*

DR. HARRY E. ISAACS, New York City.

The case, which by the courtesy of this section it is my privilege to show, has many points of interest in its history and course. The adaptation of surgery and a prosthetic appliance in the field of your specialty, are the reasons for its presentation. The history will be given chronologically and the description of the symptomatology is based on a statement written by the patient, an intelligent trained nurse, 25 years of age.

Previous to August, 1914, there is nothing of interest in the anamnesis and then, perhaps, as a coincidence, a tonsillectomy was performed by an expert, the chief of staff in the institution in which she received her training. No reason is given for its performance beyond that the patient thought she would like to have her tonsils removed. Nothing but an indefinite annoyance and irritability of the throat followed, until about seven months later when a painless swelling, the size of an egg, rapidly developed in the left submaxillary region. In two weeks this mass became painful and a febrile reaction between 100° and 101° set in. A diagnosis of tuberculous cervical adenitis was made and an operation was performed on February 23, 1915. A large solitary gland was removed through a three-inch incision along the left sternocleido-mastoid edge. Section of the gland was reported by the pathologist as being tuberculous. The wound healed *per primam* but redness persisted and the scar became keloidal, for which X-ray therapy was tried for several weeks without apparent effect.

After the excision of the gland, the throat became painful, swallowing difficult and attended by pain. Sense of taste was lost, Tinnitus developed and increasing with the severity of pain, interfered with sleep. The quality of the voice changed, becoming thick, "nasal" and hard to understand. Breathing through the nose became impossible.

On October 15, 1915, the rhinologist who had removed the tonsils, examined the patient and made a diagnosis of nasal polyp and adhesions of the naso-pharynx; these adhesions were separated digitally but the pain persisted and a thick mucinous discharge from the throat developed. The pain increased gradually until, as the patient expressed it, "all the facial bones were involved, which caused frequent fainting spells, and, uncontrolled by hyp-

*Presented before the Section on Laryngology and Rhinology of the New York Academy of Medicine, February 28, 1917.

notics or opiates, interfered with sleep." From the time of excision of the gland, up to this point, loss of weight had been progressive (118 to 94 pounds), and on February 10, 1916, the patient found it necessary to abandon work. She then consulted Dr. J. W. Weinstein, who examined her throat and found a stenosis of nasopharynx with complete occlusion of the choana, with a minute opening on the left side of the throat which he accordingly dilated. The patient felt better for two of three weeks, when the opening again contracted and the symptoms returned. Suddenly the pain disappeared. Difficulty in swallowing and impaired sense of taste

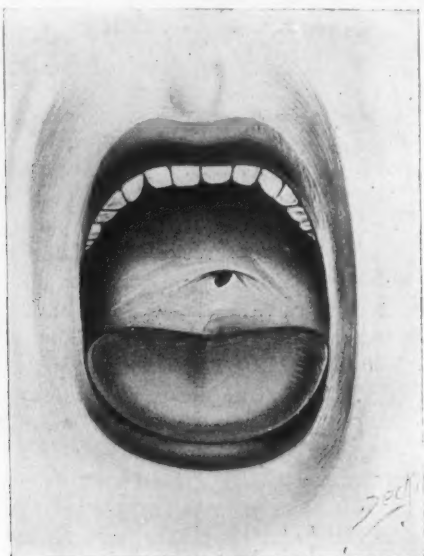


Figure 1.

persisted, voice impairment persisted and in April, 1916, Dr. Weinstein referred the patient to me for consideration of a plastic operation on the stenosed pharynx.

From this point, information concerning the case is direct. The throat showed a small opening to the left of the mid-line, admitting the tip of a probe upward and to the left indirectly into the left nares. The pharynx presented a dome-like appearance without markings of pillars, uvula or posterior palate. (Fig. 1.) Several ulcers were present about the opening, indolent and pale, but without diagnostic characteristics. Breathing was entirely *per os*. Eating was distressing to witness because of frequent noisy inter-

ruptions to secure air. The scar on the neck was keloidal, about one-half inch wide and three quarters of an inch high.

The peculiarity of the history and the findings raised a suspicion as to the nature of the process and the explanation that such a condition arose, due to a tonsillectomy, was untenable from the history, findings and a knowledge of the high character of work done by the original operator. A specimen of blood was sent to the serologist, who reported a strongly positive Wassermann reaction, which, for the first time in the year and a half of symptoms, indicated the cause of the trouble. Under appropriate treatment a negative serum reaction was obtained and maintained since. Treatment caused prompt improvement in all the symptoms. The ulcers healed. Dilatation of the nasopharyngeal opening was done eight times, be-



Figure 2.

tween April and August, but contraction was prompt. The keloidal scar melted away and assumed its present appearance.

It was then necessary to devise some means of obtaining a nasopharyngeal opening, which could be maintained. Simple dilatation was tried often enough to be considered inadequate. Incision and dilatation was considered equally impracticable because of the likelihood of subsequent contraction. A flap operation *per se* was deemed similarly impracticable because flaps, formed necessarily of dense scar tissue, could not be obtained large enough to replace the area of scar to be excised and, unless held in place by means more permanent than sutures, would promptly curl up and restore the original stenosis. If an opening in the nasopharynx once obtained could be maintained until cicatrization was complete, the probability of cure would be reasonable. The idea of a pharyngeal tube, held in place by fixation to the teeth, was then decided upon and on this

suggestion Dr. J. B. Schnee made the appliance used and illustrated in Fig. 2. It consists of a pair of wire spring holders, fitted to the molar teeth on each side of the upper jaw, joined by a bar fitting into the arch of the palate; from this bar two wires run back to the nasopharynx and support a vulcanized rubber tube, made into a form conceived to be that which the operative opening would measure.

Operation was performed on January 19, 1917, under rectal anesthesia, Dr. S. D. Ehrlich, the anesthetist, securing a quiet uneventful anesthesia of two hours duration, without gagging or mucus hyper-

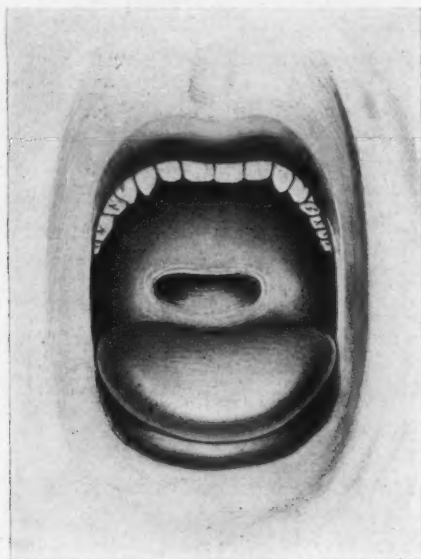


Figure 3.

secretion. Incision was made in imitation of outlines of the soft palate above the existing opening on the left. Entrance into the left nasopharynx was obtained by sharp and blunt dissection, until the tip of the finger could be introduced into left nares. From the midline the tissue was dense and cartilaginous and presented a block between the palate and nares of at least an inch in depth, obliterating all landmarks. With difficulty was an opening finally made into the right nares, and when sufficiently enlarged, the edge of the lower flap was held by tension sutures to the posterior pharyngeal wall. The prosthesis was then fitted to the teeth and it was found that the

anterior border rode too high and impinged on the septum. Accordingly, a bight was taken out of the vomer and the appliance readily snapped into place, the tube pressing evenly on the posterior pharyngeal wall against the flaps.

After operation, the voice became clear and distinct, but in 24 hours was completely lost. The sides of the throat became painful but no inflammatory reaction developed and the voice returned in about two weeks. The appliance has been worn more or less steadily since, removing it for one or two days at a time, or removed



Figure 4.

and replaced by the patient occasionally. At this time of presentation the tube has been in situ for over two weeks without ulceration or fetor. The appearance of the opening obtained is illustrated in figure 3 and its appearance with prosthesis in place is indicated in figure 4. Especial attention is called to the ease and simplicity of applying and removing the tube. With the tube in situ, eating is without difficulty, but on its removal the voice is somewhat clearer. When the condition of the nasopharynx will indicate that the contraction of the scar tissue will progress no further, the tube will be removed, or replaced for occasional use, by one of smaller size.

A course of voice-training will be instituted to secure better resonance and permit overtones to come into play. Dr. James S.

Greene has made speech records and tracings before operation and after his course of treatment is complete, comparative records will be made and presented as a final report of the case.

A few deductive remarks may be in place. Careful investigation fails to show any history or symptoms previous to those detailed. It is probable that primary infection occurred in the throat, some time after the tonsillar operation, which must be held blameless for the subsequent course. That the infection was innocent, is beyond a doubt. The adenitis was luetic in nature and a re-examination of the specimen shows a slide which may have been either tuberculous or luetic, but the latter was not mentioned in the report because of its improbability. Of course, a large solitary gland in the submaxillary region should have inclined the pre-operative diagnosis in favor of the existing condition rather than tuberculosis, but improbability was responsible for its failure of consideration. Gummata finally developed in the throat and extensive destruction and productive inflammation occurred, in which the former process, however, was less active than is usual and the commoner defects of the palate did not occur. After the diagnosis was made, the problem was simplified and the remaining difficulty of securing the nasopharyngeal opening seems to be solved in this case by the use of the appliance. Especial attention is directed to the degree of stenosis, as in cases previously seen or reported, I have found none so extensive, the usual case showing merely adhesions between the uvula and fauces without destruction thereof, and simple operations have usually sufficed. The use of setons of gauze, silk or rubber may be adapted to such conditions, but the necessity of subsequent bouginage makes the inconvenience anything but negligible. One case was reported before this section in which a stenosis of the choana narium was treated by a drill opening, establishing the communication between the nares and pharynx, which is not only apparently insufficient but must require frequent dilatation to maintain it. In the case herewith reported, each side of the nares admits the finger tip. It is true that the tendency to contract characterizes a process such as is described, yet slighter degrees of stenosis with the opening made catheter size, have been reported to maintain the opening after epithelization has been completed.

To one unfamiliar with the course of the case in which this prosthesis has been employed, the criticism may arise that the tube looks cumbersome. The best commentary on that point is the fact that the patient, although permitted to remove and replace the appliance, prefers to leave it in situ, as she is unaware of its presence.

301 East Seventeenth St.

A CASE OF TIC DOULOUREUX TREATED BY THE AVULSION METHOD OF DR. ERNEST LAPLACE.*

DR. H. HOLBROOK CURTIS, New York City.

The removal of the Gasserian ganglion with the surgical difficulties and danger to life, makes us welcome any new procedure for the relief of this most agonizing trouble, trifacial neuralgia, commonly described as *tic douloureux*.

While the description of the operation of Dr. Ernest La Place of Philadelphia was first published in *The New York Med. Jour.*, December 9, 1905, it does not seem to have been given the attention by the medical profession that some of the wonderful results have merited. We all know of some cases in which after a supposed removal of the Gasserian ganglion there has been recurrence of the neuralgia, and we are familiar with many cases where a resection of the peripheral nerve has produced an apparent cure for a long period, but eventually there was a recurrence of pain as the nerve regeneration was re-established.

The regeneration of the peripheral nerve, and the fact that after apparent removal of the ganglion the sensory fibres are enabled to form some connection with the central tracts in the medulla independent of the Gasserian ganglion, thus explaining the failure of the major operation to afford permanent relief, makes us consider the avulsion method as a procedure to be attempted before we resort to the removal of the ganglion. Collateral anastomosis is apt to occur after injections which are supposed to form an inflammation of the fibro-connective tissue and to strangle nerve impulses and function by cicatrization. The description of the operation of La Place has been very misleading. In a recent elaborate book on the subject of bone surgery, written by an eminent surgeon of this city, the removal of the branches of the fifth nerve is pictured as being done by torsion with a simple artery forceps, a plan I think impossible of accomplishment. I will briefly explain the steps of the avulsion operation which Dr. La Place insists upon as essential to success.

Mrs. J. S., aged 61, had always been healthy until seven years ago, when the first attack came on suddenly, while in Paris. The pain first appeared in the supraorbital branch of the trigeminus, and for a year was confined to the forehead and about the eye. Then the infraorbital or superior maxillary branch became affected. The inferior maxillary was never involved. The attacks became more severe three years ago, when at times the suffering she endured is indescribable. For days she would go without food or drink

*Read before the New York Academy of Medicine, December 20, 1916.

because the contact of a tumbler or opening the mouth to take food would bring on a paroxysm of such frightful pain that she was absolutely unable to endure it. In that condition, I have introduced a small urethral catheter through the nose and injected a pint of milk into the stomach.

In May, 1915, she was for five weeks at the Neurological Hospital, and was seen by Dr. Joseph Collins and Dr. Elsberg, who gave the patient alcohol injections in the region of the Gasserian ganglion. These did not prove efficacious, and a removal of the ganglion was contemplated. At this time, after five weeks at the hospital, I heard from an assistant of Dr. Ernest La Place of Philadelphia, of several cases of trifacial neuralgia which had been cured by the avulsion method of that surgeon. I investigated the matter, and determined to send her to the Medico-Chirurgical Hospital of that city and put her under treatment. I accompanied her and was present during the operation, and my daughter remained with her during her convalescence, a period of two weeks.

Description of the operation. The region of the superciliary ridge and the superior maxillary region were cleansed, and painted with iodine. A crescentic incision was made just below the border of the orbit and the infra-orbital nerve was exposed at the exit from the infra-orbital foramen and freed, in order to allow a long-bladed hemostatic forceps to pick it up. After engaging the nerve and freeing it from the artery, the forceps was firmly held and rotated in the manner of a corkscrew from left to right. After one complete rotation, very slowly made, the minute branches of the nerve could be seen as a white filamentous tree on the upper lip and region of the alae of the nose, the face being very congested from the anesthetic. One or two minutes were allowed to elapse between every slow rotation of the forceps, and the nerve wound around the instrument from the central and distal extremities. About four and a half revolutions of the forceps were necessary before the nerve was wrapped on the forceps, freed in its entirety. Dr. La Place then unwound the nerve under water in a glass dish and laid it out on a dark background to be sure that every filament was intact.

The avulsion of the superior orbital branch was done in the same manner, and the nerve removed as totally. The rather free incisions healed in a few days, and the patient returned to New York in two weeks. Since the day of the operation in December, 1915, the patient has not had a twinge of pain in her face, and from being a most desperate sufferer she has become a perfectly healthy woman, having gained twenty pounds in weight after the operation.

130 W. 59th St.

A STONE REMOVED FROM THE ESOPHAGUS OF AN INSANE PATIENT.

DR. H. ARROWSMITH, Brooklyn, N. Y.

Subject to future correction, I venture to present this stone as the largest unyielding, rigid and "unmanipulatable" (if I may coin a word) foreign body extracted entire by means of per oral endoscopy, to this date. Some dentures may have had a greater superficial area and some meat masses a greater cubic content, but such articles have been susceptible of compression, rotation or other change of presenting surface, or of piecemeal removal.

On February 17, I was asked by Dr. Gordon Gibson, Attending Surgeon to the State Hospital for the Insane, at King's Park, Long Island, to remove a foreign body, supposedly a pebble, from the esophagus of a patient at the Institution.

Joseph L., twenty-eight years of age, a painter by trade, suffering from dementia praecox, reported on February 16 to Dr. R. E. Blaisdell, the house officer under whose care he was, that he had a "pain in his throat." On being questioned, he admitted having swallowed "a pebble about as thick as his finger and somewhat longer than that diameter," the previous day. He refused to attempt to swallow solids, and liquids were promptly regurgitated, mixed with blood. A stomach tube was passed and halted ten inches from the incisors. The insertion of a probang, which I am assured was gentle and careful, corroborated the presence of an obstruction at that point. Owing to the lack of an X-ray apparatus in the hospital's equipment, no radiographs could be made to determine the size, shape and position of the foreign body.

On the afternoon of February 17, with the assistance of Drs. Gibson and Blaisdell, and in the presence of a number of the hospital staff, the patient being under oil-ether colonic anesthesia (Gwathmey's method), I passed the medium-sized Mosher ballooning esophagoscope, noting that there was absolutely no laryngeal stenosis, although the arytenoids were distinctly abraded, slightly swollen and bled easily (though moderately), the same being true of various areas in the esophagus. Ten inches from the incisors, I stopped at a foreign body, covered with a thick bloody secretion. After cleansing, this was seen and *felt* to be a stone. The rather swollen esophageal wall could be pushed away from the intruding mass to a very limited distance, not enough to

make me feel safe in attempting to pass any instrument down beside the foreign body. Inspection of the accessible presenting surface convinced me of the futility of attempting to seize and extract the stone by forceps.

Rather forcible ballooning distended only a very small part of the left lateral wall of the esophagus and through the lumen, thus indicated, I passed the Jackson mechanical spoon, keeping the spoon blade in contact with the left surface of the stone. When the spoon was felt to be free to move, I turned it to a right angle and pulled upward, with force enough to break the instrument, but not to budge the stone. Fortunately I had with me the Jack-

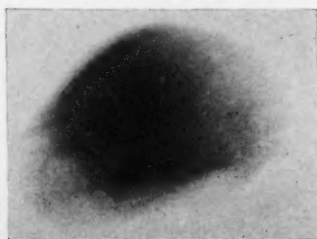


Fig. 1.



Fig. 2.

son safety-pin closer, made on the same principle as the mechanical spoon. This was introduced in the same way, the tube lip was pressed firmly against the upper surface of the stone, the right against the tube end. Tube, stone and pin closer were slowly withdrawn together. I estimate the tractive force necessary to start the withdrawal at a minimum of 40 pounds, probably it was more. The stone escaped from the instrumental grasp in the pharynx and was finally delivered by the operator's finger. It measured 2 by $1\frac{3}{4}$ by 1 inch, the greatest impacted circumference being $3\frac{3}{4}$ inches; its weight was 630 grains.

Immediately after extraction, the respiration became very slow and shallow and the patient was markedly cyanotic. I at once

again passed the esophagoscope, assured myself that the larynx was unobstructed and found that the esophagus, though somewhat more abraded than on the first inspection, was not lacerated and that the bleeding was negligible. A hypodermic injection of atropin 1-50 grain was given, and I asked Dr. Gibson to do a tracheotomy, although I was certain that the air passages were patent. Immediately after introducing the tracheal tube, the patient resumed normal breathing and the cyanosis quickly disappeared. I attribute this to the stimulation by the impact of cool air on the tracheal mucous membrane. The respiratory failure was due,

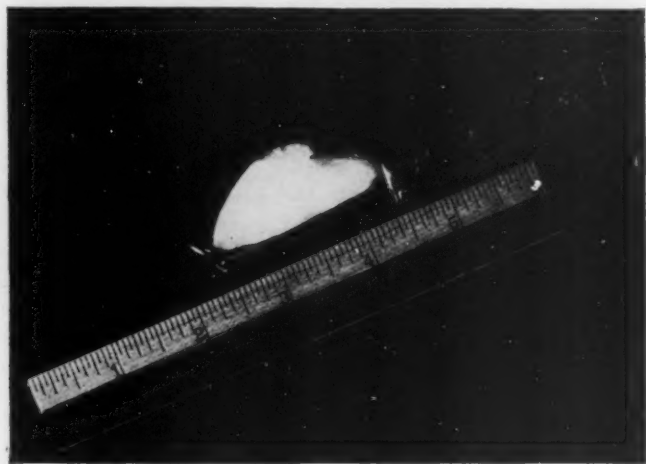


Fig. 3.

I am convinced, to a vague reflex inhibition from the forcible removal of the stone, the degree of force, in my opinion, being entirely justified by the exigencies of the patient's condition and the nature of the foreign body.

The tracheal tube was removed the next morning and the patient could swallow without much difficulty. Three days afterward he passed "three smooth white pebbles about the size of ordinary marbles, some sand and the split half of a lead pencil about two inches in length."

How a mass of this form and texture could have been induced to make its original entry is beyond my comprehension. It is, perhaps, an interesting fact that the greatest diameter in contact with the esophageal walls lay antero-posteriorly instead of transversely, as is usual.

This experience emphasizes Jackson's counsel: Study the problem presented in each instance, before commencing the mechanical attempt at extraction.

It also accentuates my previous conviction of the importance in the endoscopist's armamentarium of Mosher's esophagoscope, without which in the present instance, handicapped by the lack of radiographic information, I would have been strongly tempted to abandon any effort to remove the foreign body. Thanks to Jackson's inventive genius, the means of removal were also provided, in mechanical principle if not by intent. His recently devised spoon forceps, evolved from the early mechanical spoon, if modified to meet distant esophageal problems, will solve many future riddles which may be presented.

The time consumed in the actual examination and instrumentation of this patient was about ten minutes.

My sincere thanks to Dr. N. C. Beers are proffered, for his admirable photographs, showing the stone (in scale) and the mechanics of its removal.

I was unable to find any radiographic reproduction of a common stone, so as a matter of interest and perhaps of information to others, Mr. Shrope, the radiographer of the King's County Hospital, made an x-ray of the stone directly superimposed on the plate of which this is a print.

170 Clinton Street.

LUETIC PARALYSIS OF RIGHT VOCAL CORD.*

DR. GEORGE E. DAVIS, New York City.

The patient, age 20 years, consulted me January 5, on account of a sore throat, which began rather suddenly about three days previously. He said it was difficult and painful for him to speak or swallow. His voice was husky, and enunciation indistinct.

On inspecting the mouth and pharynx the first thing that attracted my attention was that the soft palate was drawn up and to the left so that the uvula was displaced to the left about mid-

*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, January 24, 1917.

way between its normal position in the centre and the left tonsillar pillar. The pharynx was not markedly inflamed nor were the tonsils, though the latter were moderately hypertrophied and probably the seat of infection.

The laryngoscope revealed complete paralysis of the right vocal cord and right side of the larynx and pharynx.

As there was no acute intra-laryngeal condition to account for the paralysis I went into his family and personal history, endeavoring to trace the etiology of his trouble.

Family history. Father died at the age of 54, but the patient does not know the exact nature of his final illness; thinks it was Bright's disease with complications. Mother died of acute pulmonary tuberculosis at the age of 34. He has three sisters—22, 15, and 12 years old, respectively. The two older sisters had goitre. Both were relieved by medical treatment. One brother, 18, in good health.

Personal history. Ten years ago, at the age of ten, he had a severe illness which was pronounced typhoid fever by one doctor, and meningitis by another. Following this illness he noticed he was deaf in the left ear.

Functional tests revealed total loss of function—both acoustic and static—of the left ear. The functional tests of the right ear were significant in that they showed the hearing for low notes was normal (16-2V), high notes slightly lowered (Galton .7), and the bone conduction reduced 13 seconds, the latter notwithstanding a history of a mild tubo-tympanic catarrh, indicated in the right ear at times by a sensation of stuffiness and tinnitus.

There is moderate hypertrophy of the thyroid, more on right than on the left as you will note. I hardly think though, that pressure from this on the recurrent laryngeal can be sufficient to produce paralysis of the cord.

You will note an inclination of the patient's head to the left, the muscle tonus of the right arm and right leg is diminished, as also are the reflexes on the right.

Diagnosis. The total deafness on the left, taken in connection with the diminished or shortened bone conduction on the right, particularly in a boy of twenty, and that, too, in spite of a mild middle ear catarrh, thoroughly decided in my mind the luetic origin of the paralysis, though the patient gave negative personal history. The diagnosis was confirmed by a plus four (4+) Wassermann. His infection, I think, is hereditary.

In arriving at a diagnosis in this and similar cases, the following etiological factors are worthy of note. As asserted by Wright and Smith in their text book, *cortical* tumors, hemorrhages, degenerations, meningeal inflammations and cranial depressions are hardly to be regarded, *per se*, as the cause of laryngeal paralyses. However, they may be associated with central lesions as ascending or descending degenerations, due to syphilis, the latter being the direct cause.

Seat of the syphilitic lesions. Clinical experience warrants the assertion that the seat of the luetic lesions most frequently responsible for laryngeal paralysis is in the floor of the fourth ventricle. The fact that, as in the present case, we have associated paralyses—palatal, pharyngeal (and slight facial), indicates that a unilateral lesion situated in the bulb may cause a unilateral paralysis of the cord on the same or opposite side, depending on the seat of the lesion, whether above or below the decussation of the nerve supply. In the case here reported the seat of the lesion probably is on the opposite side to the palatal and laryngeal paralyses. Nevertheless it is possible the loss of the ear function may have been peripheral, the lesion affecting the end-organs of the eighth nerve alone on that side. (A so-called “neuro-recidive.”)

This loss of ear function antedated the present *clinical*, pharyngeal and laryngeal symptoms some ten years, but withal, the date of the *anatomical* lesion of the laryngeal paralysis in this case is questionable, for as it is well known the abductor nerve supply is the first to go in progressive lesions, and moreover, that a unilateral median position of the cord often does not obviously affect the voice and respiration at the initiation of the paralysis, therefore, the more or less sudden manifestation of difficulty and pain in vocalization and deglutition does not necessarily evidence the simultaneous occurrence of the paralysis. I am inclined to the belief that the paralysis is of rather prolonged standing, and that the sudden advent of symptoms affecting the vocalization and deglutition was precipitated by the development of an acute cold.

50 West Thirty-seventh Street, New York.

RIB TRANSPLANTATION FOR CORRECTION OF EXTERNAL NASAL DEFORMITY; UNUSUAL EXPERIENCE IN 2 CASES.*

DR. WILLIAM SCRUTON, New York City.

Case 1. The patient, a girl 17 years old, presented herself at the Manhattan Eye, Ear and Throat Clinic for surgical treatment of a typical saddle nose. Luetic origin was immediately suspected by reason of her general appearance, notwithstanding the negative family history given by the parent. Blood examined for the Wassermann reaction proved negative. Potassium iodide was given for several weeks and then the cerebrospinal fluid was examined for the Wasserman reaction. This also proved negative. Later a luetin reaction was made and proved negative. A provocative dose of salvarsan is under consideration, but up to the present it has not been convenient to arrange for it as the patient does not wish to remain away from employment for a day.

The family states that the deformity occurred after a piece of bone sloughed from the nose, following a severe trauma when the girl was an infant.

The possibility of latent lues and the consequent influence in the progress of the case were appreciated at the time of operation. The type of operation employed was the very simple procedure which has become so general through the presented cases and writings of Dr. William Wesley Carter. It consisted in making an incision across the nose at the point where the connecting bar of a pair of eyeglasses would naturally apply when in position, and undermining the subcutaneous tissue above and below the incision to form a pocket for the transplant. When the transplant was placed in position an endeavor was made to anchor the upper end beneath the periosteum; it proved unsatisfactory from a cosmetic standpoint and was abandoned.

The result was apparently excellent, the patient being discharged from the hospital in ten days. About five days later she returned with a swelling extending from the bridge of the nose well on to the forehead. Incision was made through the scar and a large quantity of pus evacuated. There was very little drainage from day to day thereafter. The transplant was purposely not removed because it was thought that nature would produce a certain amount of thickening in the tissues in the effort to extrude or absorb, and some

*Read before the New York Academy of Medicine, Section on Laryngology and Rhinology, February 28, 1917.

measure of the correction might thus be saved. The discharge of pus practically ceased while the transplant remained solidly in place, much to my surprise. The wound was allowed to close and absorption progressed, resulting in the anticipated thickening and consequent correction of a very appreciable amount of the original deformity. It is chiefly for this reason that the case is presented for record.

Case 2. This patient, a young man about 22 years old, presented himself at the Manhattan Eye, Ear and Throat Clinic complaining of difficult nasal breathing as a result of trauma occurring some years ago. He had consulted a number of surgeons in another city concerning the advisability of a submucous resection of the nasal septum. Owing to the type of septal deformity present they considered that it could not be done in a manner to insure satisfactory breathing space without a strong probability of increasing a slight sinking of the cartilaginous portions of the nose which was already present. I was in thorough accord with his previous consultants, but realized that something must be attempted by someone, and it might as well be by me.

A submucous resection of the septum was done under ether as local anesthesia was refused. The operation progressed very satisfactorily until I attempted to remove the high portion of the tremendously thickened and hardened cartilage, when with the forceps engaged the power of my hand was not sufficient to force the blades through for a bite, and a twist of the instrument was necessary. I distinctly felt, with the fingers of my free hand on the nose, a decided sinking at the moment the twist was made.

The result gave good breathing-space with an increased external deformity (depression). The deformity, however, did not annoy him for about a year. He then returned to have it corrected.

The operation for transplantation of the section of rib was performed as in case 1, with this exception: It was found that a piece of rib sufficiently long to extend from the tip to the root of the nose made the bony portion of the nose too high and resulted in a grotesque appearance when placed in position. A short piece of rib section was then tried bridging from the beginning of the bony portion of the nose to the tip. This was not quite satisfactory so another section was placed under it, giving a slight boost and the desired result obtained. This unusual procedure is the reason for placing this case on record. I wish to thank Dr. John E. Mackenty for advice and assistance at this operation.

27 East Fifty-seventh Street.

UNUSUAL COURSE OF PUS IN THE NECK OF A CASE OF MASTOIDITIS.

DR. JOHN W. DURKEE, Brooklyn, N. Y.

The following case of mastoiditis is reported because of the unusual course taken by the pus in the tissues of the neck.

A. D., age 50, gave the following history. About January 27 he had neuralgic pains in the right side of the head which became severe enough on March 4 to keep him from business. On March 22 the ear began discharging and the discharge continued. At the time the discharge began a swelling appeared behind the auricle. After two weeks this swelling disappeared and a few days later a swelling appeared in the upper part of the neck at the tip of the mastoid and increased in size.

The patient came under my care April 20. The right auditory canal was filled with thick pus and there was sagging of its postero-superior wall. In the upper part of the neck just below the mastoid and extending a short distance over its tip, but not over the body of the mastoid, was a red, soft, fluctuating swelling about the size of a large hen's egg. There was no swelling or edema over the body of the mastoid. There was no auricular tenderness, no tenderness over the antrum or body of the mastoid, and only slight tenderness over the swelling in the neck. The temperature was 98.2°.

Urine examination: Volume in twenty-four hours 1,900 cc.; acid in reaction. Sp. gr. 1.034; urea 1.7 grams per 100 cc.; sugar 3.6 grams per 100 cc.; albumen, trace.

Immediate operation. An incision of the fluctuating tumor in the neck opened a large abscess cavity which extended about two and one-half inches below, and about one-quarter of an inch over, the tip of the mastoid. The pus was not in the deep tissues of the neck but directly under the skin and external to the sterno-mastoid. The usual mastoid incision was then made and the periosteum elevated. In the bone directly over the antrum and the outer part of the canal wall was a necrotic spot, about one-half inch in diameter, which was filled with granulations. Extending under the periosteum from this spot, and over the bone and fibers of the sterno-mastoid, was a sinus that connected with the upper part of the abscess cavity in the neck. The cortex was removed,

and the body of the mastoid was found broken down and filled with pus and granulations and the cells in the tip were congested. Below the antrum and between the lateral sinus and the canal wall were some deep cells. These were uncovered thoroughly but were not curetted because of the fear of injuring the facial nerve. The bone over the upper part of the sinus and over the dura of the temporo-sphenoidal lobe near the sinus, was gone, and sinus and dura were covered with granulations. These were not disturbed but the bone was further removed in all directions until healthy dura and sinus were found. The mastoid cavity was cleaned out thoroughly and packed with plain gauze. On April 24th the patient complained of difficulty in swallowing. There was no pain or sensation of a swelling in the throat; he merely had to make an effort to swallow. If he held the larynx up, swallowing was easier. It was first learned at this time that this symptom was present two days before the operation. The first dressing was done on the 24th and when the packing was removed at least two drachms of thick pus welled up from the deep cells that were between the sinus and the canal wall. The irrigation passed from these cells into the patient's throat. The rest of the wound appeared healthy.

Until May 1 at each daily dressing a large amount of pus came from the deep cells and the irrigation passed into the patient's throat. When he swallowed, air came through the deep cells in the wound, but the patient could not force air through. Efforts were made to locate the opening in the throat, but without success. At this time deep fluctuation was detected low down in the neck behind the sterno-mastoid and a large abscess was opened, under local anaesthesia. In irrigating this abscess the solution went into the patient's throat and came through the deep cells in the mastoid.

On May 4 the mastoid wound was healing well, there was practically no pus in the deep cells below the antrum, and the irrigation did not pass from them into the throat or into the wound in the neck behind the sterno-mastoid. There was still a great deal of pus coming from this neck wound.

On May 7 erysipelas appeared around the wound and involved that half of the face and head.

The temperature for the first ten days after the operation, to April 29th, did not go above 99.6. The next three days, April 30 to May 2, it reached 101.4. From that time until the death of the patient on May 7, it did not go above 100.

142 Clinton Street.

FIBROMA OF THE ETHMOID REGION.*

DR. ROBERT H. FOWLER, New York City.

The patient, John M., came to Dr. MacKenty's clinic at the Manhattan Eye, Ear and Throat Clinic in December, 1915. His chief complaint was obstruction in breathing. Examination revealed a polypoid mass completely occluding the right nostril. A piece of this growth was snared off and sent to the laboratory which reported "fibroma, hard in part; round cell infiltration."

There was a good deal of debate at the time as to whether the growth was benign or malignant. Operative procedures were decided upon and the patient was induced to have the growth removed, although he was informed that the operation would be a serious one. In January, 1916, under general anesthesia, a posterior tampon was inserted and the anterior part of the growth was removed with a snare; then the tampon was removed and the growth was seized with adenoid forceps through the naso-pharynx and removed in two masses, each about the size of a man's finger. (Specimen presented.)

The patient sustained extreme shock and hemorrhage at the time of operation, the flow of blood being so profuse after removal of the first part of the growth that he was threatened with exsanguination before the completion of the operation. However, as soon as the removal of the mass was completed the hemorrhage lessened and it was possible to examine the site of the growth before packing off the cavity. A large part of the ethmoid cells came away with the mass, and the ethmoid cavity was left open.

The pathological report on the specimen was: "Complex growth; fibromatous infiltration of polyps, with inflammatory invasion. Vessels well formed; very highly vascular, a point against its being sarcoma."

A proliferation of the pieces which remained behind took place about a month after the operation. To check this, several injections of trichloroacetic acid were made by the method that Dr. Harmon Smith has described, and since last summer the patient has had no treatment except that he has used ichthyol ointment from time to time to improve the condition of the membrane, on which huge scabs formed soon after the operation.

Previous to operation the patient's weight had been stationary at 110 pounds for two years, but since then he has gained twenty pounds and his general health is excellent.

*Read before the New York Academy of Medicine, Section on Rhinology and Laryngology, Feb. 28, 1917.

The three points of interest in this case are (1) The size of the growth, it being as large as two fingers, displacing the septum and totally occluding the nares. (2) Method of removal, the adenoid forceps being applied posteriorly. (3) The hemorrhage was extremely severe until the growth had been removed, when it suddenly lessened.

11 East Forty-eighth Street.

REPORT OF TWO CASES OF ATROPHIC RHINITIS TREATED WITH ICHTHYOL OINTMENT.*

DR. ROBERT H. FOWLER, New York City.

The first case illustrates the treatment of simple atrophic rhinitis. The patient came to the clinic at the New York Dispensary ten months ago, with a history of seven years of unsuccessful treatment for nasal disease. There was at the time a great deal of scabbing in the nose and throat. The chief complaints were headache and lack of sleep. The patient stated that for seven years he had used aqueous douches in the nose, and he was then using salt and water three or four times a day.

Examination revealed the characteristic scabbing of atrophic rhinitis, but there was not the odor of ozena. The patient was directed to discontinue the use of douches, and was instructed to use an ointment consisting of ichthyol, grs. 20; menthol, grs. 2; and petrolatum, 2 ounces. This to be applied three times a day on cotton in each nostril.

The patient has followed this treatment regularly and has had no operation. The membranes of both nose and throat are now clear of scabs, and he asserts that he is able to omit the treatment for a week without the recurrence of the scabs. He sleeps well, has no headaches, and his weight has increased from 139 to 152 pounds.

Without going into a definition of the term, atrophic rhinitis, it may be said that there is a well-defined number of cases that appear in our clinics characterized by a change in the appearance of the mucous membrane of the nose and naso-pharynx. In the milder cases, the mucous membrane of the nose is luster-

*Reported by invitation, before the Section on Laryngology and Rhinology, New York Academy of Medicine, February 28, 1917.

less; in the more severe types, crusts are present; the patient complains of an obstruction in breathing; pharyngitis sicca is almost invariably present; epistaxis is a frequent complication.

A remarkably large number of the patients presenting these symptoms give a history of having used salt and water or some other form of nasal douche. This gives apparent relief, but is not permanently beneficial. Some of these cases require operative measures, and here the ichthyol treatment may be used before and after the operation to improve the condition of the mucous membrane; on the other hand, there are cases which may be entirely relieved by the use of the ichthyol ointment.

In ozena, the same treatment relieves the scabbing condition and does away with the chief symptom, namely, the odor, so long as the patient continues the treatment, but if it is neglected, the symptoms will recur.

The procedure of stopping the nasal douche and employing an ointment instead is not only efficacious in the milder cases of atrophic rhinitis, but in cases where operative procedure is required it is a distinct aid. For instance, in many cases of ethmoiditis, the best preparation for the operation is a course of this treatment to first improve the general condition of the membrane.

To repeat: The use of the nasal douche continued over a long period of time, injures the mucous membrane of the nose; while a bland salve applied to the membrane lessens the tendency to scabbing and hastens the return to a normal condition.

The second case was typical ozena occurring in a woman 22 years of age, who first came to the clinic four months ago complaining of a disagreeable odor from the nose, extending over a period of two years, during which time she had been using salt and water as a nasal douche. Examination revealed scabs an inch and a half long throughout both nostrils and on the posterior pharyngeal wall. The characteristic odor of ozena dominated the neighborhood of the patient; her cheeks were pale, and she was very anemic. Six weeks after giving up the douche and using the ichthyol ointment, the scabbing ceased. There is now no odor, and the general health of the patient is markedly improved.

There is no claim that this is more than a palliative treatment so far as ozena is concerned. The object is simply to improve the condition of mucous membrane, not bone.

11 East Forty-eighth Street.

A CASE OF ACCESSORY TONSILS.

DR. J. A. HAGEMANN, Pittsburgh, Pa.

In January, 1917, the writer performed tonsillectomy upon a young lady to preclude the recurrence of tonsillitis, from which she had repeatedly suffered. The operation and subsequent recovery presented nothing extraordinary. But several weeks later she complained of some discomfort at the right side of the throat. Examination revealed curvilinear fissures about five-sixteenths of an inch in length on either side of the soft palate and ranging evenly with the anterior pillars. The left one would escape cursory view, while the right one was characterized by redness and slight infiltration of the approximate edges. A curved probe was readily inserted, and a little manipulation revealed the presence of a tonsillar mass, about equal to a pea in volume, in each cavity. The invasion of infectious material, causing slight local inflammation, led to the discovery of this unconformity. After removal an unmistakable cavity, entirely separate from the tonsillar fossa, was in evidence. The wounds soon cicatrized.

The apertures which appear near the caputal extremity early in the embryonic development of all vertebrates are the prefigurement of the so-called branchial clefts through which water continuously passes outward after transcurring the mouth in the lower vertebrates, such as fishes. In this manner oxygen is extracted from the water by the venous blood flowing through the gills, and thus under-water breathing is accomplished. Among amphibians much the same sub-aquatic breathing arrangement is persistent throughout life. It is plausible that the human tonsils are bated survivals of respiratory organs that functionated at an early stage of man's phylogeny. The human foetal unfoldment is in effect a compendious record of man's developmental metamorphoses. Early in his embryonic evolvement he successively assumes and relinquishes the characteristic traits of his primordial ancestry. Occasionally one or more of such traits endure post-natal, and even throughout the individual's life. Fistulous communication of the pharynx with the external surface of the neck and persistence of the thyro-glossal duct, both unsuppressed lineaments of piscine an-

cestry, are not absolutely infrequent. Rarely, however, does one come upon supernumerary tonsils. These are presumptively likewise due to persistence of embryonic vestigial media, an atavistic recrudescence of organs one time performing sub-aquatic oxygenation, then ranged in collateral pairs, each supplemental to a pristine branchial cleft.

Highland Building.

THE CLINICAL ASSOCIATION OF AMERICAN PERORAL ENDOSCOPISTS.

On November 1, 1917, the Clinical Association of American Peroral Endoscopists was organized in Philadelphia.

The purpose of this new society is, in the words of its Constitution: "The study of diseases and accidents occurring in the respiratory and upper digestive tracts, of borderline conditions and their treatment, medical and surgical, by direct inspection."

The Association also aims to impress on the internist and general practitioner the value of bronchoscopy and esophagoscopy as diagnostic methods of precision so as to make possible the accurate ocular study, in the living subject, of pathological conditions of the esophagus and lungs.

The officers of the Association are the following:

President: Dr. Chevalier Jackson, Philadelphia.

Vice-president: Dr. Hubert Arrowsmith, Brooklyn, New York City.

Secretary-treasurer: Dr. Henry Lowndes Lynah, New York City.

Members of the executive committee: Dr. Wolf Freudenthal, New York City, and Dr. Samuel Iglauer, Cincinnati.

Dr. Henry Lowndes Lynah, New York, has been appointed Professor of Direct Laryngoscopy, Bronchoscopy, Esophagoscopy and Intubation at the New York Polyclinic Medical School.

Major Ewing W. Day, Pittsburg, Pa., is Chief of Division of Head Surgery, Base Hospital, Camp Lee, Va.

Dr. H. W. Loeb, St. Louis, has been commissioned a major in the Army Medical Corps and is at present in Washington.

Dr. W. H. Roberts, Pasadena, Calif., has been commissioned a captain in the Army Medical Corps.

SOCIETY PROCEEDINGS.
AMERICAN LARYNGOLOGICAL ASSOCIATION.
(Continued from page 860.)

Discussion of Dr. Ralph Butler's paper continued.

DR. WALTER F. CHAPPELL, New York City: I would like to call attention to the case of a patient, a man forty-five years old. His present illness began one month before admission, when he became hoarse. This continued and was followed by dyspnea, at first on exertion, later continuous. His only complaints were hoarseness and dyspnea. When he entered the hospital a tracheotomy was done at once, as the vocal cords were immobile and almost in contact. The Wassermann and X-ray of chest were both negative. Salvarsan was given twice and had no effect. Two weeks after admission, under suspension, the left vocal cord was removed with scalpel and punch. Three weeks later, as there was not space enough between the cords, the left recurrent laryngeal nerve was cut at the entrance into the larynx. In ten days the tracheotomy tube could be removed. When seen two months after the last operation, he was at work and breathing easily. Cutting the nerve not only allowed the vocal cord to recede into the cadaveric position, but caused an atrophy of that side of the larynx which gave still further space. The man was to report if he had any difficulty, and has not as yet, so it is presumed he is well. Several physical examinations and nerve reflexes were negative.

DR. GREENFIELD SLUDER, St. Louis: I would like to add the record of a case seen in consultation. A physician, twenty-eight years of age, who developed acute laryngitis, apparently a grippe, and with it a very violent dyspnea which, upon inspection, showed bilateral posticus paralysis. The cords were almost in the median line. The glottis was represented by a slit through which you could have dropped an old-time silver five cent piece. The recovery was not exactly uneventful. It required some six weeks, during which time he became excited about something and smothered almost to death. Nine or ten months later he developed another infection, laryngitis developed, and again posticus paralysis, and through the three attacks I saw him in consultation.

DR. BRYSON DELAVAN, New York City: Several years ago I was called in to see a case at St. Luke's Hospital suffering with dyspnea, and I found a marked abductor paralysis. I was obliged to do an immediate tracheotomy. The obstruction, however, was not entirely due to the laryngeal box. At a certain distance below the larynx, in the trachea, we also found constriction, and endeavored to overcome it by insertion of a long tracheotomy tube. The child died of exhaustion and was found to have a large tubercular lymph node pressing upon the trachea, which was evidently the cause.

DR. W. B. CHAMBERLIN, Cleveland: I have in mind such cases as occur in the early stage of locomotor ataxia. My attention was attracted to this a number of years ago by a patient who was found unconscious in the street and taken to the police station on the suspicion of being drunk. After the usual delay it was discovered that he was not drunk but ill. On examination we found complete abductor paralysis and other signs of locomotor ataxia. I then went over to the City Hospital and made a routine examination of all tabetics we had there, and was surprised at the number of cases in which we received no history of this condition, where we found paralysis.

Some few days ago I had a patient, a man about thirty-five years old, an Italian, who came with a history of dyspnea and difficult respiration, especially on exertion. I thought, of course, of the possibility of a foreign body, but examination showed bilateral abductor paralysis. I wished to refer the man to the hospital, but he disappeared. Some four weeks later the consultant told me that he found the man in an acute attack of dyspnea from which he succumbed in a short time.

Some Clinical Observations on the Lingual Tonsil. By GREENFIELD SLUDER, M. D., St. Louis.

The diagnosis of lingual tonsillitis is simple in acute follicular cases. Should it not assume the follicular markings, it is often overlooked, particularly when the mass is not enlarged. It is recognized under these conditions by its color alone. The mass may be much enlarged in acute or chronic cases, which is, of course, easily recognizable. Not so easily interpreted is an occasional small slightly reddened follicle. These are often the origin of the symptoms.

The prognosis for singers and speakers, according to the writer's experience, should be guarded. A lingual tonsil which easily becomes a disturbing factor, either from the work of singing or speaking or from infection, must be considered most seriously. He does not believe that the singing or speaking voice can be developed to any great extent under these conditions.

The treatment of lingual tonsillitis in the acute follicular stage is like that for the faucial tonsils under like conditions. For the subacute or chronic state, with or without enlargement, nothing has been so satisfactory as applications of a small amount of silver nitrate saturated in fifty per cent glycerin. Salicylic acid saturated in ninety-five per cent alcohol is helpful, and does not taste so unpleasant. These may be made daily or as seldom as ten days. For the enlargement, galvanocautery destruction has seemed best. Hemorrhage following surgery of the lingual tonsil is more difficult to manage than any in the upper air passages.

Many of these observations have been made and recorded in more or less this form. The association of lingual tonsillitis with thyroid gland disturbance and with glossodynia, he believes has not hitherto been recorded.

It is his interpretation of clinical laryngology that the lingual tonsil plays a major role.

DISCUSSION.

DR. ALBERT G. GETCHELL, Worcester: I am very much interested and impressed with this account of the lingual tonsil. The disease undoubtedly has certain lesions that we probably do not appreciate. There is no question that there is definiteness about it and its lesion. I would like to call attention to three points which have impressed themselves upon my experience: first, its relation to the nervous system; second, to hemorrhage; and third, to cough.

There is no question but that trouble in this region would cause cough, but still I think that continued cough should not be attributed to such a lesion without a most thorough examination of the lungs. Simple examination of the sputum, without any examination of the lungs whatever, will often show the real cause of the trouble.

DR. HENRY L. SWAIN, New Haven: I have often seen how many times the sources of little lesions and the inconveniences that patients have suffered from could be attributed to and explained by conditions found in the lingual tonsil. The circulation of the lingual tonsil is peculiar—or, rather, its relation to the veins of the base of the neck is peculiar. The veins from the surface of the tongue gather together into certain large vessels deep down in front and underneath the lingual tonsil. The sudden occurrence of a feeling of fullness is perfectly explicable when you consider these venous branches which gather together underneath the lingual tonsil.

It is equally a fact that emotional stress, like an irritable plexus, is sometimes evidenced by this feeling of a lump in the throat, and this condition which I have described explains it.

It is perfectly possible to have a lingual tonsil cough and a bronchitis existing in the same person. If one treats the bronchial part and not the lingual tonsil, he is falling far short of his duty.

DR. J. PAYSON CLARK, Boston: My experience has been that the enlargement of the lingual tonsil is observed most frequently in middle aged women. The enlargement of the lingual tonsil in children, in my experience, is a very rare condition.

I have had to remove the lingual tonsil in several cases, and have used Myles' lingual tonsillectome. I have also used the wire loop. If this loop can be used it is better, because you are less liable to have hemorrhage. I have not had hemorrhage in any of my cases. I remember being called late one night to see a case for bleeding, where another physician had removed the lingual tonsil that day. The bleeding was not violent, but persistent, and I had a little difficulty in stopping it.

DR. THOMAS HUBBARD, Toledo: I think there is no question about the intimate association between acute throat conditions and acute thyroiditis, because I think we find many cases in which we are able to successfully treat the subacute or chronic conditions. It is most helpful in the reduction or checking of thyroiditis.

In a ten-year-old child, four years after removal of her tonsils and adenoids, her lingual tonsils were found enormously enlarged. There was no suggestion of recurrence of either tonsillar or adenoid tissue,

but these large masses were a mechanical obstruction to swallowing. I clipped off portions of the lingual masses, and following that there was no improvement and relief from dysphagia.

DR. ROBERT C. MYLES, New York City: There are several points about the lymphatic tissue at the base of the tongue. It seems to me that a very interesting one is whether the removal of the tonsils in early life does not by some vicarious attempt on the part of the lingual tonsil to supply the physiologic function of the tonsil, result in their becoming hypertrophied in this attempt.

It has been my habit for many years to remove lingual tonsils in a little different way from that originally indicated. On account of some hemorrhages and cicatricial tissue, I have tried to devise some method of obviating both; one was to take out every other lymphatic tonsil with a guillotine and leave an intermittent one. That aided me very much in relieving the scar tissue. I have also left islands of tissue. In using the guillotine one should not press too deeply. If you go beneath the tonsil you are more liable to have hemorrhage than if you put the proper pressure on the guillotine, which makes it possible to remove as much as you may elect.

DR. BERT R. SHURLEY, Detroit: The importance of this relationship of Waldeyer's ring to the thyroid is certainly a very exact and definite thing, but the key to the whole situation, to my mind, is infection. And while my paper which was referred to by Dr. Sluder was written five years ago, I have followed up carefully a large series of cases since that time. Of course, as Dr. Sluder says, no one expects to treat cases in this manner and not have the proper surgery of the thyroid attended to when that is necessary.

In regard to cases of hemorrhage from the throat, I think perhaps there are a great many mistakes made by not properly examining the chest. We know full well that twenty-five per cent of all cases of pulmonary tuberculosis have hemorrhage at some time or other during the course of that disease, and it seems to me that it is just a matter of not thinking of that. We should always have a very thorough and complete chest examination wherever there has been hemorrhage from the throat.

DR. JOHN MACKENTY, New York: I believe that any infection in the throat may have secondary expression in the thyroid. This was brought home to me very forcibly by the case of a man with a foreign body in the esophagus. I put in the bronchoscope and failed to get the foreign body, but found the spot where the body had rested. This man was very ill, with a high temperature and pulse, and had a tender enlarged thyroid gland. I was positive there was pus in the neck, and opened the neck and went down and found no pus. I then opened the thyroid gland, and in the center of the gland I found a large abscess which was secondary to the condition in the esophagus.

On another occasion, following the removal of the tonsil, there was considerable local infection and the patient developed acute thyroiditis. So I believe we may say that any infection in the throat or nose may

have secondary manifestations in the thyroid, either simple or suppurative.

With regard to the question of bleeding of lingual tonsil, I have found benefit from forcibly pulling the tongue forward and holding it in that position for a time.

DR. MAX A. GOLDSTEIN, St. Louis: In reference to Waldeyer's ring, I think it has been rather insignificantly looked into, and Sluder's observation about the relationship to systemic infections taking place through this small lower lymphoid mass ought to give us much food for thought. We are doing a lot of operative work in the faucial tonsil, and our enucleations are coming thick and fast. We know that even when the faucial tonsil has been thoroughly encapsuled, we do have recurrences of systemic infections; and it is likely that many of those infections come, not through the lingual tonsil, but through the lymphoid masses which lie about the pillars. There is some possibility that such observations as were presented by the essayist may give us an opportunity to think of this radical surgery when the time comes for the pendulum to swing the other way.

Dr. Swain has pointed out on previous occasions that the mass of lymphoid tissue is rather dependent for its pathology and inflammation more on the intense venous relationship than on the lymphatic. I think that variolities are sometimes as frequent in lingual tonsil as are the acute and chronic follicular inflammatory reactions, but those are things this paper has brought forth, and I believe that the development of this particular phase of Waldeyer's ring will give us a little closer insight into the whole pathology of this lymphoid area.

DR. GREENFIELD SLUDER, St. Louis (closing the discussion): I feel that a very substantial addition to the paper has been given by Dr. Swain in his explanation of the globus hystericus. I did not know the network arrangement of the veins beneath the lingual tonsil, and it is not recorded in any of the anatomies I know of.

Dr. Clark spoke of the enlargement of the lingual tonsil in children being rare. That is not my observation. The enlargement of the lingual tonsil in children is a very frequent manifestation.

I have seen the faucial tonsil take on the recurrent inflammatory reaction with sore throat after faucial enucleation.

That the chest must be investigated in cases of cough seems to me to be self-evident.

Some Points in the Surgical Treatment of Goiter. By J. E. MACKENTY, M. D., New York.

The writer emphasizes the need of laryngologists, and especially the younger men, to take up the surgery of the neck.

He considers all treatment with rest as a basis as deceptive, and the delay engendered pernicious. He does not, however, advocate surgery in all cases. In all progressive cases, short of already advanced toxæmia, some surgical effort should be undertaken, such as boiling water injections into the gland, ligation of one or more poles, removal of half the gland, with or without ligation of the remaining poles, etc.

In well developed and progressive toxic goiter nothing short of the ablation of three-fourths to seven-eighths of the gland can be relied upon to effect a cure. No operation should be considered until after the patient has been under observation in bed for a length of time, and has undergone a careful general examination.

Clinic calorimetry is now used to differentiate the active periods of the disease and to accurately determine the degree of benefit from any surgical or medical treatment. Early operation is most important. Local anesthesia should be rarely used, and never for any extensive operation. Deep anesthesia is not requisite. Rapidity of technic must be combined with gentleness of manipulation or it is valueless.

By complete operation is meant removal of from one-half to seven-eighths of the gland. In operating the four important things to be considered are: The parathyroids, recurrent laryngeal nerves, hemorrhage, and the amount of gland tissue to be removed.

These are considered in detail. Free drainage with a liberal opening is important, and permits continuous saline irrigation through the tubes, which is often exceedingly valuable.

Thyroidemia may be avoided by attention to the following points: Careful preliminary treatment, rest, overfeeding, etc.; the reduction of a minimum of fear on the part of the patient, light anesthesia, non-traumatic surgery, the judicious selection of the proper operation and correct time of operation; alkalies and water before operation, etc.

The following types of hyperthyroidism are bad risks:

1. Where the disease is progressive in spite of rest.
2. Cases showing no remissions.
3. Appearance of psychosis.
4. Very active symptoms in cases with small glands.
5. Marked exophthalmus.

No case should, however, be refused some form of surgical help, providing it can be established that the disease is not in its terminal stage.

DISCUSSION.

DR. JOHN F. BARNHILL, Indianapolis: It would be a fatal mistake to attempt any sort of operative procedure in a case in which the heart is so dilated or hypertrophied as not to be able to withstand the operation. The mortality from simple cases ought to be pretty nearly one hundred per cent.

I know of no other operation in surgery, except brain surgery, where a competent anesthesia is more useful than in this operation.

Every precaution must be taken to preserve the parathyroids, and this is best done by leaving a portion of the capsule posteriorly. The capsule in this operation I believe is the anatomic structure which must be borne in mind more than anything else, and if one loses his capsule and works outside the glandular capsule, he is lost for the whole operation, and he cannot, therefore, be certain as to whether he will injure the nerve or remove one or more parathyroids. Hence, his procedure must

keep the surgical and glandular capsule in mind all the time, and if he works between them it is almost impossible either to injure the recurrent laryngeal nerve or to take away the parathyroid glands.

The patient is already, in toxic cases, badly run down, and, therefore, clean and bloodless surgery here is the thing. Shock does not occur often if you do not lose much blood.

The amount of a gland to be removed is an important question, requires the greatest knowledge, and it is here, I think, that consultation is often necessary. To remove three-quarters or seven-eighths of a gland that does not need that much taken away is a mistake. To leave it if seriously diseased is equally a mistake.

There are often other glands involved along with this gland, and if that fact is not ascertained before operation and operation undertaken, the operator will almost certainly have a death, because to remove a toxic thyroid does not in such instances cure the case.

The gland must not be handled roughly or pulled up unnecessarily with heavy instruments by the operator or those helping him. It must be handled gently, because if there is toxemia there may be of rude handling of the gland be unnecessary toxicity after operation.

DR. THOMAS HUBBARD, Toledo: I see many of these cases before and after operations with reference to voice interference and difficulty in respiration. Fortunately, most of the cases in which there is an impairment of the vocal action, usually unilateral, improve within a reasonable time after operation. In others a supplemental action takes place in the opposite vocal cord, ultimately producing good voice, but with permanent impairment of movement of the cord on one side.

DR. HARMON SMITH, New York City: I have tried to ascertain in how many cases the nerve was involved previous to or during the course of the operative procedure. I have reached no decision which enables me to make any statement relative to the positive number, but a great many were involved previous to the operation. There was a paresis and not a paralysis. I expect to make some reports relative to it in due course of time.

DR. JOHN E. MACKENTY, New York (closing the discussion): The reason for two tubes is that when you take out more than half the gland you have the trachea dividing the field. If you wish to secure complete drainage, you must put a tube on either side of this tube.

I believe the involvement of the laryngeal nerve interferes to some extent with the finer quality of the voice—as for singing or public speaking.

I have injured the nerve on one side and had impairment of the voice for a fair length of time, which was always recovered from, so far as speaking was concerned.

The Mayos report considerable percentage of nerve involvement before operation. I have examined cases pretty carefully, and have not been able to corroborate this. In a few cases there seems to be some lack of proper tone or movement of the cord, but not to the extent the Mayos report in their examination of cases before operation.

DISCUSSION ON REPORT OF COUNCIL OF NATIONAL DEFENSE.

DR. CHARLES W. RICHARDSON, Washington: We, as citizens of the United States, have benefitted to an unusual extent from our citizenship in this country, more so than citizenship in any other country as individuals. We have profited by this; our success has been great, our comforts have been manifold, and it is no more than right that we should assume the duties and obligations of citizenship, and offer our services fully to our country, and encourage all those with whom we come in contact with this spirit of enthusiasm. We must stand, gentlemen, for our country, for democracy, and for the suspension of this horrible war, as soon as we can; and by giving aid and comfort and doing our utmost by enlisting ourselves and causing others to enlist, we can bring this about.

DR. HARRIS F. MOSHER, Boston: What the government asks of us today is a wholesale coming into their ranks without any reservation whatever. They say they can make no promises. On the side they intimate that perhaps, probably even, the special man will be used for special work, but no promises are given, so that you have to make up your minds whether you will go on with the feeling of a slacker and wait until you are asked to do special work, or go in today and run your chances of being put to work with which you are unfamiliar. The only way out of that is to stay in this uncomfortable position until some action is taken toward the forming of a special base hospital. When you read the report, if you do, you will find that was recommended. If you talk with the men from Washington you will find they feel that will come. Major Lister said that will probably come, if Pershing carries over the amount of men he is supposed to carry over, within the next six months. Until that time I am unhappy, and I feel very many of you are unhappy. I do not know what to do. It is a much easier thing to go in and a much harder thing to stand out. I for one am going to stand out until the time comes to go in and do the work I think I am more able to do.

DR. ROBERT C. MYLES, New York City: I have had some very peculiar experiences lately at the New York Polyclinic where we have three hundred specialists, and a lot of them have joined this corps, and I wish you could see some of the work they are doing. It is so far removed from their specialty that they know nothing about it. It is simply ridiculous. I do not know what I could do if I was sent down to the Mexican border to treat dysentery. According to what we hear, that will all be corrected later. There ought to be some action or activity, some committee formed or appointed with a medical office to plan some law to relieve the situation. The eye and ear are two of the most important organs in war.

DR. JOSEPH H. BRYAN, Washington: This is a very important matter for us as citizens and as specialists, but we must remember that we are at a very grave crisis, and every man, young and old, every woman and every child, has got to come forward and do something. This is no child's play. This war, according to the best thinkers and the best observers, is not going to be over this fall, this winter, or even next, and every resource of this country has got to be utilized. I have gone into

the Officers' Reserve Corps, having served some years ago in another branch of the service. Of course, it is a very hard thing to do, to go in and abandon the care and responsibility I have, but nevertheless I feel that having served once it is my duty to go there again. I have gone in voluntarily and am willing to accept any position. I have accepted a subordinate rank; I can serve as Captain just as well as Major, and am perfectly willing to do that, but we are all in bounden duty to do something to help out in this crisis. On the other hand, I think if the matter is brought very forcibly to the attention of the Surgeon General of the United States Army by these various societies, representing that men of experience, men who have developed these specialties of the eye, ear, nose and throat, are best fitted to work in the base hospitals or some hospital devoted to the treatment of diseases resulting from injuries, and that they can best serve their government if their services are utilized along these lines. I am sure the Surgeon General will treat you courteously and possibly do something along those lines. Of course, you must remember that the war department has been working on a basis of a hundred thousand men, and has to work now on a basis of over two million men, and have not got the system or force to combat these difficulties. They are swamped with work at present. But if we will take the stand and assert that our services are best utilized along the lines on which we have been working, I believe some impression will be made upon them. In the meantime we can all go in and serve our country, to the best of our ability.

DR. BURT R. SHURLY, Detroit: It will undoubtedly be necessary to establish a number of base hospitals of the eye, ear, nose and throat. We have one by way of example in the British army now located at Folkestone, which has done very wonderful service for the British army. If we could have a base hospital on the foreign service, and one in this country, or more as will be necessary, and organize the eye, ear, nose and throat hospitals of the various large cities as they are already organized, and have a definite method of referring all cases from these five hundred bed base hospitals or the general hospitals to the special hospitals, we would undoubtedly be able to organize and establish a splendid service for the army of the United States at home and abroad.

It seems to me that this wonderful scientific usefulness simply requires organization and authority. Without the authority of the Surgeon General's office we can do nothing whatever, because there must be a definite plan of work, and the organization must be a definite one, and follow along a very definite plan, which has been worked out with very great detail by the Surgeon General's office.

Undoubtedly, the organization and equipment of an eye, ear, nose and throat hospital would require special organization and equipment. These are things, which have never been done before in this country. Therefore, it does seem to me the time has come when a committee from these various societies should organize and send out at least two base hospitals. There could be forty-eight highly trained efficient specialists to care for certain cases sent from the various base hospitals which the

ordinary eye, ear, nose and throat man on the staff of this hospital would not be able to properly care for.

DR. JOSEPH H. BRYAN, Washington: I would like to emphasize one fact. In case this committee is appointed, and I hope it will be, the matter can be brought directly to the attention of the Surgeon General, and the fact emphasized that the men who are highly trained in the various specialties will be wasted if they are sent on the ordinary staffs, and the point made that now there is actually a very great waste of good material to be sent on duty of that kind when the younger men can be utilized for that purpose, and that we as highly trained specialists should be called upon to do the work as outlined by Dr. Shurly.

DR. CHARLES F. RICHARDSON, Washington: If we appoint this committee, which I hope will be done, I am sure the Surgeon General and assistants, both of the army and navy, will listen to that committee and will do all that that committee wishes—that is, within reason.

Every man knows what his duty is to himself, to his family, and to his country, but there is one fact that stands paramount. The example of the class of men that represents this society to the younger medical men throughout the country is a great one, and should not be lost sight of. If you can go about among the younger medical men and say, "I am already in the service," that young man is going to think, and he is more apt to offer himself to the service of his country if he knows that we have already offered ourselves freely to our government, to be used as the government sees fit. And I hope that the men of this society will offer themselves freely for the service of their country to be used as the army authorities may see best and fit to make use of them.

DR. D. BRYSON DELAVAN, New York City: I represent that type which does not know just what to do. I do not know what my place is. For a year and a half I struggled to establish a hospital in Paris for the repair of injuries of the head and face. At the end of the first year sixty thousand men were needing repair in that department alone, simply from France and Belgium. I am chairman of the Executive Committee of the American Red Cross Hospital in Paris, managed by Dr. Blake. The nearest member of my family last week got an ambulance unit that is on its way to the front, and each week a certain number of us go to the Naval Recruiting Station and examine ears and throats. In other words, not knowing what to do, like all the rest, we are willing to take the first thing that comes to hand and do the best we can. Dr. Shurly has touched the keynote when he said that organization is needed.

DR. MAX A. GOLDSTEIN, St. Louis: Without much circumlocution I would suggest that there be a propaganda of education to put us all in a position to study the question as carefully as we know how. This might be developed by the committee already urged. Personally, at the present time, I should like to place at your service for this organization and its committee, the *Laryngoscope* and its editor, for any publicity work you require whenever and as often as you require it, and to place at your disposal furthermore the mailing list of the office of the *Laryngoscope*, which includes the names of three thousand men of this country.

Final Conclusions Regarding Amputation of the Epiglottis for Tuberculosis. By LORENZO B. LOCKARD, M. D., Denver.

Amputation of the epiglottis is as safe a procedure as tonsillectomy. In over four hundred cases, in the majority of whom vitality was reduced to the lowest ebb, not a single direct fatality resulted.

The objection most frequently advanced is that no operative procedures are justified unless the lesion is so circumscribed as to be capable of complete excision.

It must be borne in mind that in nine cases out of ten the sole object is palliation, and usually in patients upon whom all other methods of treatment have failed.

Even when a cure is considered possible, removal of all involved tissue is not invariably essential to success. It has been demonstrated repeatedly that when an epiglottis is universally infiltrated, and only the upper half or two-thirds is removed, the stump rapidly recedes to normal. It is rare that the disease recurs in the stump.

Healing of the stump is usually rapid and complete, regardless of the extent or rapidity of progress in the complicating pulmonary and laryngeal lesions, hence the question of advisability of operating in this manner hinges upon two questions: in incurable cases what amount of relief may be anticipated, and in cases otherwise hopeful, what influence will the operation have upon the accompanying laryngeal lesions?

A number of patients are living upon whom the operation was performed from ten to twelve years ago, as a palliative procedure, and in whom the resultant unexpected improvement in lungs and larynx was so complete that eventual arrest ensued.

The improvement in accompanying lesions can be ascribed in large part to the same influence that occasions pulmonary betterment: the removal of pain, increase in nourishment taken, improved sleep, and lessened cough.

Another important factor is the increased accessibility of the larynx to treatment. After the epiglottis is removed it is often easy to destroy by galvanocauterization lesions that were previously completely hidden. It is a fact that a surprising subsidence in these accompanying processes is frequently observed.

The chief indication for amputation, however, is and must remain, the relief of pain, without thought to the eventual cure of either laryngeal or pulmonary diseases.

The one great contraindication, in the author's experience, is that form of epiglottic involvement, either infiltrative or ulcerative, in which the process is beginning to involve the base of the tongue or the pharyngoepiglottic folds.

The entire lateral walls and base of the tongue may and usually do break down within a few weeks after the very first signs of disease become manifest. In these cases only is amputation absolutely contraindicated. In all others, if pain exists and is uncontrollable by other treatment, excision is advisable. No bad effect upon the general health has been observed. Complete anesthesia can be obtained, and the operation itself need not, in the average case, require more than a half minute.

Ozena and Asphyxiating Gas. By MARCEL NATIER, M. D., Paris, France.

The writer finds a melancholy pleasure in presenting the lamentable history of a young soldier, in that he feels that the recital of his case goes to prove conclusively that ozena is but a local manifestation of a constitutional condition, a fact which Natier had repeatedly maintained in previous communications.

In October, 1915, a soldier, twenty-four years of age, who had always been in perfect health, no hereditary or venereal affection, received five bullet wounds and was rendered unconscious by a bomb of asphyxiating gas. His mask had dried up and was valueless. He recovered consciousness only to fall into repeated syncope. He was carried to the rear, transferred to Vitry le Francois, where he had to remain three weeks because of his febrile condition. He suffered most excruciating pains from his nose to the bifurcation of his bronchi, and received special care. Five weeks after the accident he was removed to Paris, to a base hospital, where he remained six months. During all this time he could not swallow except with most excruciating pains. He then was admitted, March 18, 1916, to the Salpetriere, where his extreme muscular weakness, respiratory troubles, ozena and vomiting were noted. On October 25th the writer first saw him and noted remarkable collapse of both alae, ozena active, marked anemia. The collapse of the alae caused insomnia and mouth breathing, with pain. To relieve this the patient put pieces of a match in each nostril on going to sleep. The ozena was noticed three or four months after the accident for the first time. Irrigations with warm salt water, while causing pain, was followed by amelioration.

As the patient was always well until his injuries, the writer feels justified in tracing the causal factor of his ozena to the asphyxiating gas and the subsequent functional disorders.

Ordinarily ozena is considered inseparable from old and far advanced atrophic rhinitis traceable back to the first years of life, the atrophy slowly developing.

In this soldier the determining cause was at the time sudden and violent, the effect cruel and deplorable. That the unfortunate man did not succumb immediately or in the general delay at the arrival of succor is marvelous. The poor fellow was fortunate in that he did not develop tuberculosis, as thousands of others do. The patient recovered.

The writer says, in his opinion ozena is not a true morbid entity, idiopathic or real, but a unique and always a symptomatic expression of a profound localized disturbance of the general health. Once again it is verified, and supports the assertion that ozena is but a consequence, distant more often, but also under color of exceptional events of the physiologic calamity. The cause of the latter is of less importance. Its intensity merits consideration.

We are compelled to discard, as he has always done in his studies of the subject, the various theories more or less fantastic, and in particular the microbic theory, invoked to explain the production of ozena.

(1) *Sarcoma of the Nasal Septum*; (2) *Laryngoepiglottidean Cyst*. By
MAX A. GOLDSTEIN, M. D., St. Louis.

Male, aged fifty-six years. Eighteen months ago began to be troubled with occasional obstruction of left side of nose, continuing about a month, followed by relief and then recurrence. No history of epistaxis. Latterly two or three nosebleeds, not very profuse. No headache or pain of any kind. Loss of fifteen pounds in weight in six months.

Nasal Examination.—Mass on septum obstructing left side. Right surface of septum infiltrated and thickened, causing some obstruction on that side. Nasopharynx negative. Throat negative. No evidence of involvement of the accessory sinuses.

Operation.—September 26, 1916, mass, together with the entire septum, being extirpated. Recurrence after one month. Histologic examination of mass showed round cell sarcoma.

A CASE OF LARYNGOEPIGLOTTIDEAN CYST.

Boy, twelve years old, came under observation September 27, 1915. Had been hoarse since he was one month old. This hoarseness had been ascribed by family physician to a "cold." No laryngologic examination had at any time been made. The condition seemed to remain quiescent all these years until shortly before the boy was brought to the writer for examination, at which time he had become very dyspneic. The dyspnea was quite marked; patient anemic and frail, not cyanotic, and unable to speak above a whisper. There had not been much difficulty in swallowing. No regurgitation of food. Laryngeal examination showed a mass the size of a walnut on the left side, involving the laryngoepiglottidean region. There was no fever. Mass was yielding to touch and could easily be palpated with the finger. Mass incised, the contents consisting of clear, yellow, sticky fluid. Subsequent examination of vocal cords, examination of which was heretofore impossible because of obstruction of view by the mass, was negative. Boy regained the use of his voice, though through habit he would speak in an undertone. No recurrence of cyst to date, and boy now speaks in normal voice.

The following officers were elected for the ensuing year (Fortieth Anniversary): DR. J. SOLIS COHEN, Honorary President; DR. THOMAS H. HALSTED, President; DR. JOHN E. RHOADES, First Vice-President; DR. D. CROSBY GREENE, Second Vice-President; DR. HARMON SMITH, Secretary; DR. J. PAYSON CLARK, Treasurer; DR. JOSEPH H. BRYAN, Librarian. Council: DR. THOMAS HUBBARD, DR. ALEXANDER MACCOY, DR. THOMAS R. FRENCH, and DR. JOSEPH L. GOODALE.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

Meeting of October 2, 1917.

HERMAN B. COHEN, Reporter.

PROGRAM.

Etiology and Specific Treatment of Hay Fever. DR. A. PARKER HITCHENS.

Dr. Hitchens emphasized the importance of a diagnosis, obtained by (1) a thorough rhinoscopic examination to exclude any abnormality; (2) a specific diagnosis, dependent upon the season of the year, spring and summer producing the pollens of common grasses, fall the pollen of rag-weed. The author suggested a button, containing a cover-glass coated with a glycerine mixture, by which means the particular pollen inhaled may be identified; (3) skin tests made similar to vaccines, using a tablet triturate of pollen. At the end of an hour and again in 24 hours, the reaction is noted as is also the pollen used. Negative tests may show an immediate area of redness but which does not increase in size.

Prophylaxis. An initial dose of extract containing 0.0025 mg. nitrogen given two or three months before the season; subsequent injections at 5 to 7 day intervals. Phophylactic injections are not successful in every case.

Treatment in season. Individual consideration is necessary, as the period of relief varies. Few persons are relieved for 24 hours only and in these cases daily doses are necessary. Normal periods of relief are five days. The author then went into the history of hay fever with a view of determining the exciting causes. Many causes have been mentioned, *e. g.*, external irritant dust, plant emanations, various odors, atmospheric conditions, solar heat, constitutional defects of hay fever patients, nervous diathesis. Dr. Hitchens enumerated the uric acid theory of 1868; the bacterial theory of 1869; the pollen theory of Blackley followed by the nasal theory (nasal disease); the three factor theory, a combination of the existing opinions, requiring three elements viz: constitutional defect, pathological nasal condition and external irritant. The last mentioned theory persists to the present day. The work of Dunbar in 1903 was then reviewed; his experimental work, corroborating the work of Blackley; his work upon the chemistry of the pollen determining the exciting cause or special substance causing the symptoms of hay fever. The special substance found was an albuminous body or tox-albumen. This latter substance Dunbar was able to demonstrate as being thermostable; acid stable. Enzymes such as pepsin and trypsin were unable to destroy it. Lastly, it is precipitated by complete saturation with ammonium sulphate. The toxin-antitoxin theory of Dunbar was soon attacked from the anaphylaxis standpoint and it is now agreed that the symptoms of hay fever are merely a manifestation of hypersusceptibility of the tissues to the albumen of certain pollens.

Treatment by pollen vaccine. This treatment has given further evidence in favor of the anaphylactic nature of hay fever. Dr. Hitchens went into details in the preparation of the vaccine. He claims that 88 per cent. of patients treated have reported entirely free from symptoms or are markedly benefited. Dr. Hitchens gave the following conclusions:

1. Hay fever is due to a protein constituent of the pollen of plants.
2. The hay fever attack is a manifestation of hypersusceptibility to this protein and the disease is to be classed among the anaphylactic phenomena.
3. By means of very simple skin tests the exact varieties of pollen to which an individual is hypersusceptible may be determined.
4. It is a well known fact that hypersusceptible animals may be desensitized by the use of minute doses of the protein to which they are susceptible.
5. In like manner hay fever patients may be desensitized to the pollens to which they are hypersusceptible by the subcutaneous injection of extracts from these pollens.
6. By the repeated injection of proper pollen extracts before the season a certain percentage of patients may be immunized to hay fever.
7. At least 80 per cent. of the patients receiving pollen vaccines may expect considerable relief or entire freedom from symptoms throughout their season.

A discussion of Dr. Hitchens' paper was entered into by the following men:

Dr. George W. MacKenzie was unwilling to commit himself to any one form of treatment in hay fever. In the last three or four years he has been using or injecting a filtrate of the patients nasal secretions. He claims to obtain positive results in 90 per cent. of his cases. If a pollen is present on the nasal mucous membrane, he states that it will be present in the secretion collected for the filtrate.

Dr. Otis Stickney uses an electro-cautery to desensitize the membrane. He thought that the general condition of the patient, particularly the gastro-intestinal tract, should be looked after.

Dr. Lewis, with the use of vaccine, gets relief in 75 per cent. of cases; none are absolutely cured. Some relief is obtained with bacterial vaccines. He advocates surgical interference where necessary. In 15 per cent. of cases he obtains no relief whatever from the use of vaccine.

Dr. Stein of Lancaster, in quoting 15 cases in seven years, obtained improvement in 8 cases and slight improvement in 7. In the present year he has obtained five clinical cures and one failure.

Dr. Stauffer wished to have an explanation of dog emanations.

Dr. Gile emphasized the importance of diagnosing the case of hay fever. He stated that some cases of rhinorrhea are often mistaken for hay fever. Some cases are due to polypi; therefore, a thorough rhinologic examination is necessary.

Meeting of November 6, 1917.

SYMPOSIUM OF THE LARYNX.

Anatomy of the Larynx. DR. ROBERT F. RIDPATH.

Dr. Ridpath emphasized the following points: The larynx should be considered the root of a tree; the bronchi and their branches, the branches of a tree. In this manner the study of this portion of the respiratory organs becomes simplified.

Secondly, the incompleteness of the tracheal cartilages permit the rings to come together in the act of respiration. The cricoid (signet) ring being the only complete ring of cartilage of the larynx. Concerning the thyroid cartilage; up to the age of puberty it remains practically the same size. It acts as a shield to the vocal bands. Particular emphasis was laid upon the motion of the arytenoids in their articulation with the cricoid. The motion as carried out by these cartilages is three-fold, viz. downward, forward and inward, resulting in the approximation of the vocal bands. The reverse motion produces relaxation or the opening of the vocal bands. This latter motion of upward, backward and outward is produced by the posterior crico-arytenoid. The epiglottis and glottic region were clearly described.

Emphasis was laid upon the difference in production of tone and pitch of the voice, the latter being produced by the tightening of the thyro-cricoid ligament simulating the tightening of the strings of the violin. Tone is dependent upon the individual anatomy and is aided by other methods.

The speaker concluded with the description of the sinuses pyriformi and the aryepiglottic folds. It is these latter folds that overlap or cover the orifice to protect the larynx from foreign bodies and not the epiglottis.

Physiology of the Larynx. DR. HERMAN B. COHEN.

Dr. Cohen emphasized the knowledge of the cartilage articulations in order to understand the workings of the larynx, the two main articulations being the crico-arytenoid and the crico-thyroid. It was the cricoid that is the movable cartilage and not the thyroid. The sole opener of the larynx is the posterior crico-arytenoid and the closers of the larynx are the lateral crico-arytenoid, the thyro-arytenoid, the vocales and the single muscle, the transverse arytenoid. The tensors of the cords are the two crico-thyroids, which bring the cricoid to the thyroid. In discussing

the muscles of phonation in comparison to the muscles of respiration with particular reference to the importance of these two groups of muscles, the former was conceded as being subordinate to the latter. The fact was brought out, that it was the posterior crico-arytenoid that was so commonly affected in unilateral paralysis of the larynx. The large source of nerve supply with especial reference to the recurrent laryngeal nerve was then given in detail. The epiglottis, as was mentioned earlier, is not essential for the protection of the laryngeal orifice from foreign bodies but does assist in the modification of the voice.

Pathology of the Larynx. DR. NATHAN P. STAUFFER.

The speaker mentioned as the most common diseases in the order of frequency the following: Tuberculosis, diphtheria, papilloma, carcinoma; edemas; foreign body, lues, typhoid or post-typhoid paralysis. Describing each in detail he emphasized the ulceration of tuberculosis as conglomerate. He warned the physicians that where there was sudden hoarseness in typhoid fever to be prepared with a tracheotomy set. Dr. Stauffer concluded with quoting a few cases as presenting possible effects of infantile paralysis.

PRESENTATION OF PATIENTS.

Dr. Fielding O. Lewis presented a case of laryngostomy on a young man for stenosis following the swallowing of Sloan's liniment.

A second case of laryngostomy performed upon a boy, 19 years of age, the boy having received a severe injury by falling on a stage, and striking his larynx. This patient had a web across the cords with a small opening in the web.

A third patient, luetic, 32 years of age. Stenosis of the larynx. He also had a tracheotomy performed.

Dr. Edgar J. Stein presented a patient with total laryngectomy for dyspnea, aphonia and pain due to carcinoma. Preliminary tracheotomy was performed. Operation performed five years ago and at the present time the patient is comfortable and is able to take care of himself.

Dr. Robert F. Ridpath presented a man complaining of hoarseness due to papilloma on a vocal cord, its attachment being by a pedicle, causing the small tumor to disappear and hide beneath the cord.

Dr. Rowland read a report on a case of acute emphysematous swelling on the anterior aspect of the larynx.

Patient, female, 32; sudden coughing spell; temporary closure of the glottis followed immediately by complete relief. Few days later she complained of a lump in the throat and a constant tickling and desire to cough. Examination revealed a round swelling on the anterior aspect of the thyroid cartilage near the cricoid articulation. Pressure caused severe coughing and discomfort and slight crepitus was elicited. During the next six or seven weeks the patient used iodine ointment and gentle massage. About two months later the condition disappeared as suddenly as it came on. There has been no recurrence. Dr. Rowland diagnosed the case as an *emphysematous cyst* based upon the following facts: Slight crepitus, transient duration, its onset during a coughing spell, and its sudden disappearance.

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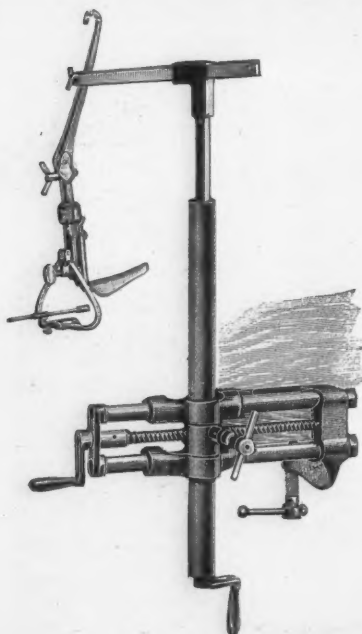
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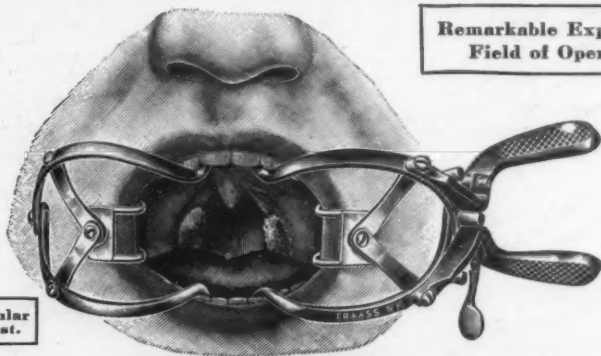
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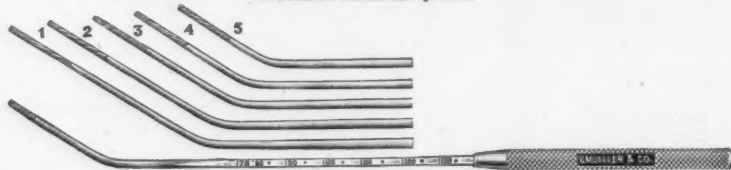
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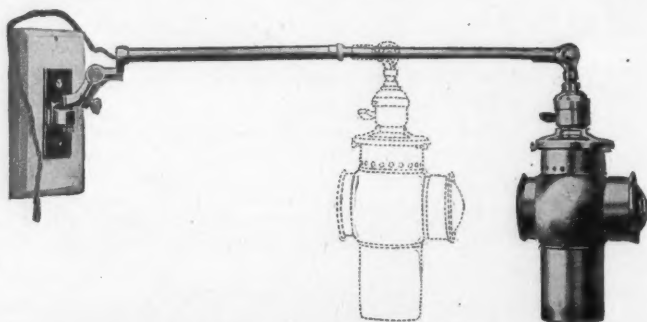
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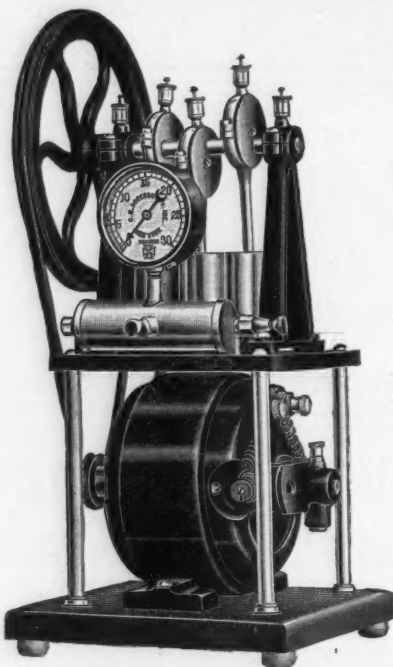
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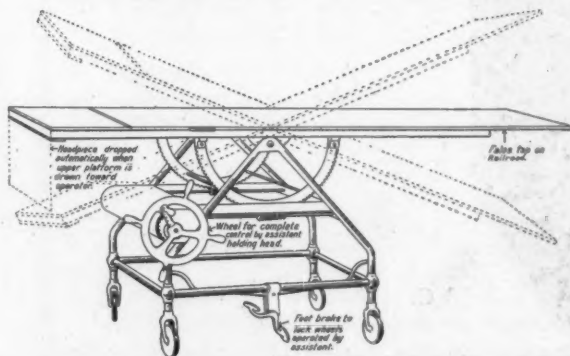
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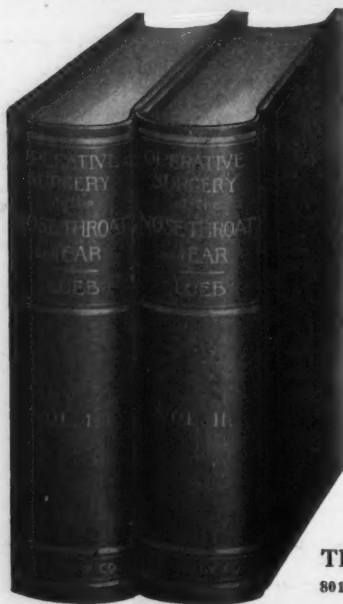
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